

**UNITED STATES BANKRUPTCY COURT
FOR THE WESTERN DISTRICT OF NORTH CAROLINA
Charlotte Division**

In re:

GARLOCK SEALING
TECHNOLOGIES, LLC, *et al.*,

Debtors.¹

Case No. 10-BK-31607

Chapter 11

Jointly Administered

**RESPONSE AND OPPOSITION OF THE OFFICIAL COMMITTEE
OF ASBESTOS PERSONAL INJURY CLAIMANTS TO DEBTORS' MOTION TO
EXCLUDE OR STRIKE COMMITTEE MEDICAL EXPERT WITNESS OPINIONS**

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¹ The Debtors are Garlock Sealing Technologies LLC, Garrison Litigation Management Group, Ltd., and The Anchor Packing Company.

TABLE OF CONTENTS

TABLE OF AUTHORITIES	iii
INTRODUCTION	1
ARGUMENT	8
I. EVIDENCE BEARING ON GARLOCK’S <i>DAUBERT</i> ATTACK ON THE COMMITTEE’S MEDICAL AND SCIENTIFIC EXPERTS	8
A. The Committee’s Medical Experts are Far Better Qualified than Garlock’s.....	8
B. There is No “Safe” Type of Asbestos Nor Any “Safe” Level of Asbestos Exposure.	11
C. Exposure to Chrysotile Asbestos, Including Chrysotile Asbestos from Gaskets and Packing, Causes Mesothelioma and Other Asbestos-related Disease.	16
D. Claimants’ Exposures to Asbestos from Working with and Around Garlock’s Asbestos-containing Packing and Gaskets.....	22
E. The Level of Asbestos Exposure from Even a Few Weeks of Working Around Gaskets and Packing is Thousands of Times Higher than “Ambient” Air.....	23
LEGAL ARGUMENT & CITATION OF AUTHORITY	27
II. THE OPINIONS OF THE COMMITTEE’S EXPERTS SATISFY THE LIBERAL AND FLEXIBLE <i>DAUBERT</i> STANDARD FOR ADMISSIBILITY	27
A. Admissibility Under <i>Daubert</i>	27
B. The Committee’s Medical Experts Are Well Qualified.	29
C. The Opinions and Testimony of the Committee’s Medical Experts Are Relevant.	29
D. The Opinions and Testimony of the Committee’s Medical Experts Are Reliable.	30
III. GARLOCK’S VARIOUS ARGUMENTS REGARDING THE ALLEGED UNRELIABILITY OF THE COMMITTEE’S MEDICAL EXPERT OPINIONS ARE WITHOUT MERIT	31
A. Specific Causation Is Not at Issue in this Proceeding as No Expert Is Being Offered to Prove Specific Causation for any Individual Claimant.	31
B. The Committee’s Medical Expert Opinions Are Not based upon the “Each and Every” Exposure Theory of Causation.	33
C. It Is No Defense That Garlock’s Victims Were Also Exposed to Asbestos from Other Manufacturers’ Products; an Individual’s Cumulative Exposure to Asbestos – Including Chrysotile – Can Cause or Contribute to Causing Mesothelioma.....	35

D. Garlock’s Various Attacks on the Reliability of the Committee’s Opinions Is Overbroad and Fails To Consider the Hundreds of other Relevant Articles on which the Committee’s Experts Rely39

1. Epidemiology Studies Are Not Necessary To Prove Causation under *Daubert*, and in Any Event, the Committee’s Experts Rely on Various Peer-Reviewed Epidemiology Studies.40

2. Case Reports Are Routinely Relied on by Experts when Assessing Mesothelioma Causation.....44

3. Animal Studies Can Be Considered As Well.46

4. The Committee’s Experts Rely on Numerous Publications in the Medical and Scientific Literature in Addition to the Statements of Governmental Agencies.....46

5. The Committee’s Experts’ Opinions Are Reliable and They Have “Good Grounds” To Support Their Conclusions.....49

IV. GARLOCK’S ARGUMENTS THAT THE COMMITTEE’S MEDICAL EXPERTS SHOULD BE EXCLUDED ON THE BASIS OF BIAS AND/OR LACK OF CANDOR IS WITHOUT LEGAL OR FACTUAL SUPPORT51

A. The Committee’s Experts Are Not “Quintessential Experts for Hire.”51

B. The Committee’s Experts Have Not Made any Misleading Statements to this Court.....53

C. Garlock Has Failed To Demonstrate that the Committee’s Experts Did Not Consider Other Relevant and Contrary Studies.54

CONCLUSION.....55

TABLE OF AUTHORITIES

CASES

<i>80 South Eighth Street Ltd. Partnership v. Carey-Canada, Inc.</i> , 486 N.W.2d 393 (Minn. 1992)	30
<i>Beech Aircraft Corp. v. Rainey</i> , 488 U.S. 153 (1988).....	27
<i>Benedi v. McNeil-P.P.C., Inc.</i> , 66 F.3d 1378 (4th Cir. 1995)	27, 28, 40, 41
<i>Berger v. Amchem Products</i> , 818 N.Y.S.2d 754 (N.Y. Sup. Ct. 2006)	42
<i>Blancha v. Keene Corp.</i> , Civil Action No. 87-6443, 1991 U.S. Dist. LEXIS 15394 (E.D. Pa. Oct. 24, 1991)	30
<i>Borel v. Fibreboard Paper Products Corp.</i> , 493 F.2d 1076 (5th Cir. 1973)	36
<i>Celotex Corp. v. Tate</i> , 797 S.W.2d 197 (Tex. Ct. App. 1990)	30
<i>Daubert v. Merrell Dow Pharmaceuticals, Inc.</i> , 509 U.S. 579 (1993).....	5, 27, 28, 29
<i>Dixon v. Ford Motor Co.</i> , 70 A.3d 328 (Md. 2013)	5, 34, 35
<i>Dixon v. International Harvester Co.</i> , 754 F.2d 573 (5th Cir. 1985)	40
<i>Eagle-Picher Industries, Inc. v. Balbos</i> , 578 A.2d 228 (Md. Ct. Spec. App. 1990), <i>aff'd in part and rev'd in part on other grounds</i> , 604 A.2d 445 (Md. 1992)	31
<i>Eagle-Picher Industries, Inc. v. Balbos</i> , 604 A.2d 445 (Md. 1992)	35, 36
<i>Fusaro v. Porter-Hayden Co.</i> , 548 N.Y.S.2d 856 (N.Y. Sup. Ct. 1989)	30
<i>General Electric Co. v. Joiner</i> , 522 U.S. 136 (1997).....	46
<i>Georgia Pacific Corp. v. Pransky</i> , 800 A.2d 722 (Md. 2002)	30
<i>Globetti v. Sandoz Pharmaceuticals, Corp.</i> , 111 F. Supp. 2d 1174 (N.D. Ala. 2000).....	45
<i>Haggerty v. Upjohn Co.</i> , 950 F. Supp. 1160 (S.D. Fla. 1996)	46

<i>Harashe v. Flintkote Co.</i> , 848 S.W.2d 506 (Mo. Ct. App. 1993).....	30
<i>Held v. Avondale Industries, Inc.</i> , 672 So. 2d 1106 (La. Ct. App. 1996).....	30
<i>Heller v. Shaw Industries., Inc.</i> , 167 F.3d 146 (3d Cir. 1999)	37, 38, 41, 50
<i>Holbrook v. Lykes Bros. Steamship Co.</i> , 80 F.3d 777 (3d Cir. 1996)	28
<i>Hollander v. Sandoz Pharmaceuticals Corp.</i> , 289 F.3d 1193 (10th Cir. 2002)	47
<i>Hollander v. Sandoz Pharmaceuticals Corp.</i> , 95 Supp. 2d 1230 (W.D. Okla. 2000)	46
<i>Hose v. Chicago Northwestern Transportation Co.</i> , 70 F.3d 968 (8th Cir. 1995)	40
<i>In re Armstrong World Industries, Inc.</i> , 285 B.R. 864, 202 Bankr. LEXIS 1564 (Bankr. Del. 2002).....	28
<i>In re Asbestos Products Liability Litigation (No. VI)</i> , MDL Dkt. No. 875, 2010 U.S. Dist. LEXIS 123090 (E.D. Pa. Nov. 15, 2010).....	38, 41
<i>In re Hanford Nuclear Reservation Litigation</i> , 292 F.3d 1124 (9th Cir. 2002)	33
<i>In re Paoli Railroad Yard PCB Litigation</i> , 35 F.3d 717 (3d Cir. 1994)	28, 41, 50
<i>In re Patenaude</i> , 210 F.3d 135 (3d Cir. 2000)	31
<i>In re Specialty Products Holding Corp. (Bondex)</i> , 2013 Bankr. LEXIS 2051 (Bankr. D. Del. May 20, 2013).....	6, 7
<i>Kannankeril v. Terminix International, Inc.</i> , 128 F.3d 802 (3d Cir. 1997)	28, 29, 51
<i>Knight v. Kirby Inland Marine Inc.</i> , 482 F.3d 347 (5th Cir. 2007)	55
<i>Kumho Tire Co. v. Carmichael</i> , 526 U.S. 137 (1999).....	8, 27, 42
<i>Landrigan v. Celotex Corp.</i> , 605 A.2d 1079 (N.J. 1992)	42
<i>Larson v. Johns-Manville Sales Corp.</i> , 399 N.W.2d 1 (Mich. 1987).....	30
<i>Lofton v. McNeil Consumer & Specialty Pharmaceuticals</i> , No. 3:05-CV-1531-L (BH), 2008 U.S. Dist. LEXIS 94391 (N.D. Tex. July 25, 2008).....	48, 54

<i>Loudermill v. Dow Chemical Co.</i> , 863 F.2d 566 (8th Cir. 1988)	40
<i>Mavroudis v. Pittsburgh-Corning Corp.</i> , 935 P.2d 684 (Wash. Ct. App. 1997).....	31
<i>McAskill v. American Marine Holding Co.</i> , 9 So. 3d 264 (La. Ct. App. 2009).....	30
<i>Milward v. Acuity Specialty Products Group</i> , 639 F.3d 11 (1st Cir. 2011).....	28, 47
<i>Pick v. American Medical Systems, Inc.</i> , 958 F. Supp. 1151 (E.D. La. 1997).....	45
<i>Pritchard v. Dow Agro Sciences</i> , 705 F. Supp. 2d 471 (W.D. Pa. 2010).....	51
<i>Reserve Mining Co. v. Environmental Protection Agency</i> , 514 F.2d 492 (8th Cir. 1975)	30
<i>Rutherford v. Owens-Illinois, Inc.</i> , 941 P.2d 1203 (1997).....	31
<i>Sheffield v. Owens-Corning Fiberglass Corp.</i> , 595 So. 2d 443 (Ala. 1992).....	30
<i>Spaur v. Owens-Corning Fiberglas Corp.</i> , 510 N.W.2d 854 (Iowa 1994)	31, 36
<i>Tragarz v. Keene Corp.</i> , 980 F.2d 411 (7th Cir. 1992)	30
<i>Tyler v. Sterling Drug, Inc.</i> , 19 F. Supp. 2d 1239 (N.D. Okla. 1998).....	45
<i>Weisgram v. Marley Co.</i> , 169 F.3d 514 (8th Cir. 1999), <i>aff'd</i> 528 U.S. 440 (2000)	27
<i>Wells v. Ortho Pharmaceutical Corp.</i> , 788 F.2d 741 (11th Cir. 1986)	41
<i>Westberry v. Gislaved Gummi AB</i> , 178 F.3d 257 (4th Cir. 1999)	37
<i>Zimko v. American Cyanamid</i> , 905 So. 2d 465 (La. Ct. App. 2005).....	36

RULES

Fed. R. Bankr. P. 9017	27
Fed. R. Evid. 702	27
Fed. R. Evid. 803(18).....	49

The Official Committee of Asbestos Personal Injury Claimants (the “Committee”), by and through their undersigned counsel of record, submits this Memorandum of Law in Response and Opposition to the Debtors’ Motion to Exclude or Strike Committee Medical Expert Witness Opinions pursuant to *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).² In support of the Committee’s Response and Opposition, the Committee states as follows:

INTRODUCTION

This is a proceeding to estimate Debtors’, Garlock Sealing Technologies, Inc. and its Debtor subsidiaries (collectively, with their predecessors in interest, “Garlock”), aggregate liability for pending and future mesothelioma claims. There are approximately 4,000 individuals (“Claimants”) diagnosed with mesothelioma (the vast majority with pleural mesothelioma, although there are some peritoneal mesotheliomas as well) who have pending lawsuits against Garlock for their injuries caused in part by their exposure to Garlock’s asbestos-containing gasket and packing products. For many decades, Garlock manufactured and distributed various asbestos-containing products, namely gaskets used to seal connections between pipes, and valve packing materials used to seal and prevent leakage from valves. Although Garlock was aware of the dangers posed by asbestos since at least the 1950s, Garlock continued to produce and sell those products, without adequate warnings to end-users, until 2000. Garlock’s products were used, and workers were exposed to the asbestos they contained, in a wide range of occupational settings, such as shipyards and ships, steel plants, steam plants, and petrochemical facilities, to name a few. Many of the workers in those facilities fell ill, or will fall ill in the future, as a result of exposure to asbestos fibers, including asbestos emitted from Garlock’s products.

² Debtors’ memorandum in support of their motion is cited below as “**Garlock Brief.**”

As this Court is well aware, over the course of approximately one week in July of 2013, the Committee's highly-qualified medical experts demonstrated the following well-established propositions regarding asbestos and disease: a) chrysotile asbestos, such as the type predominately found in gaskets and packing made by Garlock, causes mesothelioma; b) there is no safe level of exposure to any type of asbestos, including chrysotile; c) exposures to asbestos that are as brief as a few days can cause mesothelioma; d) mesothelioma is caused by the cumulative amount of asbestos exposure, and that the more a person is exposed the greater the risk; e) the medical and industrial hygiene literature demonstrates that high levels of asbestos fibers are released into the air when a gasket is cut, scraped or abraded while being created, fitted or removed; and f) both the users and bystanders working with and around asbestos-containing gaskets and packing are exposed to asbestos at a level that is thousands of times higher than what is found in background ambient air.³

Despite the overwhelming medical and scientific evidence demonstrating the above propositions, Garlock's Motion seeks to exclude the causation testimony of three of Committee's well-credentialed experts, Dr. Laura Welch, Dr. Arnold Brody and Dr. Andrew Brodtkin. Garlock's Motion is based on its own experts' long held opinions that chrysotile asbestos cannot cause mesothelioma in humans except at extraordinary high levels of exposure and that the amount and type of chrysotile asbestos exposures from gasket work cannot possibly be high enough to cause or contribute to causing mesothelioma.

As noted previously, this is a proceeding to estimate the Debtors' aggregate liability for pending and future mesothelioma claims, not to decide the merits of any particular case or group of cases. The scheduling orders governing the Estimation Hearing have made clear that

³ This level ranges anywhere between 0.1 and 29 fibers of asbestos per cubic centimeter of air ("f/cc"). By contrast, the level of asbestos in ambient air is .00001 to .00005 f/cc.

individual plaintiffs are not parties to the Estimation Hearing, that no individual plaintiff's claim is going to be allowed or disallowed in the Estimation Hearing, that no individual plaintiff is required to try his or her case to this Court, and that no individual plaintiff is required to provide expert witness reports and expert testimony necessary to prove the merits of his or her case against the Debtors. Such litigation may occur in a different proceeding before different judges conducting jury trials, but the merits of individual asbestos cases are not at issue in this proceeding.

Because this is a proceeding to estimate the Debtors' total liability for pending and future asbestos personal injury claims, and not a trial of each case on the merits, this Court need not decide which set of medical/science experts are correct on the key issues of whether exposure to asbestos from the Debtors' asbestos-containing products can cause or contribute to mesothelioma. Indeed, as acknowledged by Garlock in its opening statements to this Court: "We're not asking the court to decide the merits of any individual claim, or decide any scientific issues here. . . . As the court has said, we're not asking the court to determine whether chrysotile is a cause of mesothelioma."⁴ The medical/scientific issues disputed by the parties here were an issue in virtually every mesothelioma case the Debtors ever faced as defendants in the tort system. When these issues were tried to a jury, sometimes the jury found in favor of the Debtors, and other times in favor of the plaintiff, but in the vast majority of cases the parties resolved the dispute by settlement long before a verdict was possible. The uncontradicted testimony of both plaintiff's and defense attorneys with extensive experience trying cases for or against and settling cases with or for the Debtors, when they were active defendants in the tort system, makes clear that the medical/science dispute at the center of every one of the Debtors'

⁴ Hearing Tr. 18:25 – 19:2, 27:21-22 (July 22, 2013) ("Garlock Opening Statements").

mesothelioma cases was already something the lawyers on both sides were well aware of and took into account in deciding whether and at what price to resolve cases.

In any event, Garlock's *Daubert* arguments fail to hold water. The "medical science" case it presented, and the arguments it makes to the effect that there is no "reliable science" to support the opinion that "low dose" exposure to chrysotile asbestos from its products can contribute to mesothelioma causation are the exact same arguments based on virtually the exact same evidence that Garlock relied on in defending mesothelioma cases pre-bankruptcy, and that other gasket manufacturers, companies that use asbestos gaskets in their products, and other chrysotile product makers, have relied on and continue to make in virtually every mesothelioma case that has been tried since Garlock went into bankruptcy. There are literally dozens of orders from trial or appellate courts around the country that have addressed Garlock's and similarly situated defendants' evidence and arguments in just the past three years. The vast majority of courts considering the question have concluded that whether or not chrysotile asbestos from an "encapsulated product" contributed to cause a plaintiff's mesothelioma is a jury question. For the sake of brevity, the Committee has provided the Court with three fairly representative examples:

In the fall of 2010, shortly after Garlock went into bankruptcy, Judge Eduardo C. Robreno, the Judge in charge of the 50,000 or more asbestos cases that are consolidated in the MDL in Philadelphia, heard and rejected *Daubert* challenges to Dr. John Maddox's testimony that exposure to chrysotile asbestos from encapsulated products including gaskets and floor tiles could not contribute to cause the plaintiff's mesothelioma.⁵ In *Schumacher*, the Court was faced with the defendants' motion *in limine* to preclude the expert testimony of Dr. Maddox's opinion

⁵ See Order, *Schumacher v. Amtico*, Case No. 2:10-1627 (E.D. Pa. Nov. 2, 1010) (copy attached as Ex. 1).

that “low dose chrysotile asbestos fibers cause mesothelioma.” *Id.* at 1, 3. The defendants contended that Dr. Maddox’s opinion was “devoid of proof, contrary to epidemiological and pathology research, and [was] lacking in supportive empirical data.” *Id.* at 3. Judge Robreno, however, rejected the defendants’ arguments and concluded that Dr. Maddox’s testimony satisfied the reliability and requirements of Federal Rule of Evidence 702 as well as the *Daubert* standard by relying upon “numerous published studies and reports, drawing from the fields of pathology, radiology, epidemiology, and industrial hygienics,” including the Helsinki Criteria for Diagnoses and Attribution. *See id.* at 3-4.

With respect to Dr. Welch, specifically, in *Dixon v. Ford Motor Co.*, 70 A.3d 328 (Md. 2013),⁶ the Maryland Court of Appeals (Maryland’s highest court), following an exhaustive review of Dr. Welch’s testimony and the bases for it, reinstated a verdict for a woman whose mesothelioma was caused by “take home” exposure to asbestos as a result of her husband doing brake work on Ford vehicles. Ford made virtually the exact same arguments that Garlock makes now, based on essentially the same “science” that Garlock brings to this Court’s attention (including the same “brake worker” studies discussed extensively by Garlock’s expert, Dr. Garabrant), yet Maryland’s highest court specifically determined that Dr. Welch’s testimony was sufficiently reliable under the *Frye* standard for a jury to base a verdict on it. *Dixon*, 70 A.3d at 331. The *Frye* standard, that an expert’s testimony must be “generally accepted” to be admissible, is a more rigorous standard for expert testimony admissibility than is *Daubert*.⁷

⁶ Copy attached as Exhibit 2.

⁷ In replacing the stricter “general acceptance” test of *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923), with its requirement that the proffered testimony merely be reliable and helpful, the *Daubert* Court expressly stated that it did so in keeping with the “liberal thrust” of the Federal Rules of Evidence, and emphasized that the inquiry under *Daubert* is a “flexible one,” which focuses “solely on the principles and methodology, not on the conclusions they generate.” *See Daubert*, 509 U.S. at 588, 594-95.

Third, in a case that went to verdict just this month, Crane Co., a defendant that used asbestos containing gaskets in its product, argued to the court that there was no reliable science supporting the plaintiff experts' testimony that chrysotile exposure contributed to cause the plaintiff's peritoneal (testicular) mesothelioma.⁸ The plaintiff filed a brief in response to this argument,⁹ and the trial court admitted the testimony. Apparently the jury was not convinced as to the merits of Crane Co.'s arguments either, as the resulting \$38 million dollar verdict demonstrates.¹⁰

The fact that Garlock's *Daubert* arguments are completely beside the point in the context of a bankruptcy estimation is perhaps best demonstrated by the recent decision of the federal bankruptcy court in Delaware (a court that has overseen more asbestos bankruptcy cases than any other court in the country) in the case of *In re Specialty Products Holding Corp. (Bondex)*, 2013 Bankr. LEXIS 2051 (Bankr. D. Del. May 20, 2013).¹¹ Indeed, the *Bondex* court was tasked with determining issues nearly identical to those before this Court – that is, the estimation of the present and future claims against the debtor, Bondex, a manufacturer of chrysotile asbestos-containing joint compound products. As in this case, the Official Committee of Asbestos Claimants in *Bondex* also offered the expert testimony of Dr. Welch and Dr. Brody, who opined that exposure to chrysotile asbestos from the debtor's products can cause mesothelioma, and that low dose exposures to chrysotile asbestos can cause mesothelioma. Following a week-long

⁸ See Def. Crane Co.'s Mot. *in Limine* to Exclude Test. that Chrysotile Asbestos Causes Peritoneal Mesothelioma, Case No. 2012-CP-40-6675, *Garvin v. AGCO Corp.* (S.C. C.P. Richland Aug. 26, 2013) (copy attached as Ex. 3).

⁹ See Pl.'s Resp. in Opp'n to Def. Crane Co.'s Mot. *in Limine*, *Garvin* (Aug. 29, 2013) (copy attached as Ex. 4).

¹⁰ See Verdict Form (Compensatory Damages), *Garvin* (Sept. 11, 2013) (copy attached as Ex. 5); Verdict Form (Punitive Damages), *Garvin* (Sept. 11, 2013) (copy attached as Ex. 6).

¹¹ Copy attached as Exhibit 7.

bench trial, the court specifically credited Dr. Welch's testimony that chrysotile asbestos could be a cause of mesothelioma over the debtor's expert's opinions to the contrary. *Bondex*, 2013 Bankr. LEXIS at *20.

As discussed below, Garlock's motions should be denied for any of the following reasons:

- Garlock's Motion about the relevance and "fit" of the Committee's medical and scientific experts' testimony ignores both the issues to be decided in this proceeding and what Drs. Welch, Brodtkin, Brody and the other Committee's experts actually testified about as a response to the medical and scientific opinions that Garlock is attempting to bring into the case;
- Defendants mischaracterize the actual opinions of Dr. Welch and Dr. Brodtkin by selectively quoting snippets of testimony out of context (a practice by an asbestos defendant that the Maryland Court of Appeals recently condemned when it reinstated a mesothelioma verdict supported by Dr. Welch's testimony on July 25, 2013 in *Dixon*);
- Garlock mischaracterizes and speculates about alternative exposures to asbestos, which are irrelevant under *Daubert* in any event;
- Garlock ignores the conclusions reached by the World Health Organization, OSHA, the Environmental Protection Agency, the Agency for Toxic Substances and Disease Registry, and the National Institute for Occupational Safety and Health, and virtually every government in the world which have determined that there is a causal relationship between chrysotile asbestos and mesothelioma; and
- Garlock ignores the voluminous amount of scientific literature supporting the opinions that the occupational exposures to asbestos experienced by individuals who worked with asbestos-containing gasket and packing material manufactured by Garlock is sufficient to cause mesothelioma, including significant studies published in just the past two years.

In courtrooms, the debate between the experts over the hazards of chrysotile asbestos is just that – a debate.¹² Outside the courtroom, in the real world, every scientific agency that has ever studied the question has concluded that chrysotile causes mesothelioma, that there is no safe

¹² Juries hear the "chrysotile debate" in courtrooms around the country every day, but despite repeated attempts by "experts" retained by asbestos miners and product manufacturers to persuade the World Health Community or the United States government that chrysotile cannot cause mesothelioma, no reputable scientific organization agrees with this view.

level of exposure to it, and asbestos containing gaskets are dangerous products if proper protective measures are not taken to reduce or eliminate exposure from working with them.

Given that the keystone for admissibility under a *Daubert* hearing is whether the expert “employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field,”¹³ these undisputable facts of how chrysotile asbestos and asbestos-containing gaskets are treated in the real world outside of litigation should be grounds in and of itself to deny Garlock’s motion. For these reasons, and the reasons set forth in greater detail below, Garlock’s motion should be denied.

Point I of the argument below reviews evidence germane to Debtors’ motion. Point II reviews *Daubert* standards and demonstrates that the Committee’s medical experts easily pass *Daubert*’s tests of relevance (or “fit”) and reliability. Parts III and IV refute Garlock’s arguments to the contrary.

ARGUMENT

I. EVIDENCE BEARING ON GARLOCK’S *DAUBERT* ATTACK ON THE COMMITTEE’S MEDICAL AND SCIENTIFIC EXPERTS

A. The Committee’s Medical Experts are Far Better Qualified than Garlock’s.

Although Garlock does not explicitly challenge the qualifications or credentials of the Committee’s medical experts Dr. Laura Welch, Dr. Drew Brodtkin, and Dr. Arnold Brody, it is important for the Court to understand just how much better qualified the Committee’s experts are to opine on the medical issues surrounding chrysotile causation than are Garlock’s experts.

Dr. Welch is a board-certified internist and occupational medicine physician who has diagnosed and/or treated at least a thousand patients with asbestos-related disease, and has conducted an extensive longitudinal epidemiological study of sheet metal workers and asbestos-

¹³ As the Supreme Court made clear in *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999).

related lung disease.¹⁴ She has published approximately seventy-five papers in the peer-reviewed medical and scientific literature, more than a dozen of which involved asbestos-related disease, and has also peer-reviewed articles submitted for publication in industrial and occupational medicine journals around the world.¹⁵ One of Dr. Welch's epidemiology studies relating to mesothelioma causation was cited by the International Agency for Research on Cancer ("IARC") in its 2012 Monograph on asbestos.¹⁶ She has been recognized by state and federal courts, including asbestos-related bankruptcy proceedings, as an expert in asbestos-related epidemiology and causation and has testified before Congress twice on these topics.¹⁷ This Court recognized Dr. Welch as an expert in internal medicine, occupational medicine, the epidemiology of asbestos-related disease, and the causation of mesothelioma.¹⁸

Dr. Brodtkin is a board-certified physician in Occupational, Environmental and Internal Medicine and is a Clinical Associate Professor in the Department of Environmental and Occupational Health Sciences at the University of Washington.¹⁹ During his fellowship in Occupational Medicine, Dr. Brodtkin became the co-investigator of a large cohort of over 4,000 asbestos exposed workers, 25 percent of whom were pipefitters, called the "Carotene and Retinol Efficacy Trial" ("CARET study").²⁰ The CARET study was designed to study the risk factors pertaining to the development of cancer that was organized through the Fred Hutchison Cancer

¹⁴ Welch Tr. 2078:17-23, 2083:15 – 2085:1, 2099:4-22 (July 31, 2013); ACC Ex. 3001.

¹⁵ Welch Tr. 2082:4 – 2083, 2099:23 – 2100:8; ACC Ex. 3001.

¹⁶ Welch Tr. 2089:21 – 2091:3.

¹⁷ *Id.* at 2099:23 – 2101:3.

¹⁸ *Id.* at 2102:8-14.

¹⁹ Brodtkin Tr. 1916:3-9, 1917:25 – 1918:24 (July 30, 2013); ACC Ex. 3332.

²⁰ Brodtkin Tr. 1918:1-17.

Research Center.²¹ This Court recognized Dr. Brodtkin as an expert in the areas of Environmental and Occupational Medicine.²²

Dr. Brody, a research scientist, holds a Ph.D. in cellular biology and since the mid-'70s has conducted extensive work in the area of experimental pathology for asbestos-related diseases.²³ Dr. Brody has conducted animal studies and cellular induction studies to research the potential of the various asbestos fiber types to cause disease in animals and in humans.²⁴ In addition to writing more than 153 peer reviewed scientific articles, 130 of which related directly to asbestos, and fifty-five book chapters and proceedings that relate specifically to the molecular and cellular aspects of asbestos disease, Dr. Brody has served as faculty at several medical schools and universities and lectured on pulmonary anatomy and asbestos disease.²⁵ This Court recognized Dr. Brody as an expert in the fields of cell biology and experimental pathology.²⁶

By contrast, Garlock's experts have far fewer peer reviewed publications that deal with asbestos or mesothelioma causation than do the Committee experts. Although Garlock's attack on the reliability of Dr. Welch's, Dr. Brodtkin's, and Dr. Brody's opinions about chrysotile and mesothelioma causation essentially boil down to an argument about what the asbestos epidemiology demonstrates, Garlock's experts who testified in this hearing are far less qualified on that subject than the Committee's experts.

For example, Garlock's epidemiologist, Dr. David Garabrant, has only four peer-reviewed papers that even mention asbestos in the title. Two of these papers dealt with colon

²¹ *Id.* at 1918:1-17.

²² *Id.* at 1926:2-10.

²³ *Id.* at 1818:6-17 (July 30, 2013); ACC Ex. 3562.

²⁴ Brody Tr. 1821:21 – 1822:1.

²⁵ *Id.* at 1818:22 – 1819:3, 1820:11 – 1821:7.

²⁶ *Id.* at 1822:2-10.

cancer, not mesothelioma, and the other two are an industry-sponsored “meta-analysis” (a review of other people’s studies) concerning “friction product” exposures and a study of mesothelioma in Los Angeles that ultimately did not draw any conclusions about gaskets or friction product exposures.²⁷ Dr. Sporn is a pathologist, not an epidemiologist, and none of his publications are analytical epidemiology studies of asbestos and disease nor do any of them deal specifically with the causation of asbestos diseases.²⁸ Dr. David Weill is neither an epidemiologist nor a specialist in occupational medicine, and has only one peer reviewed paper on asbestos issues at all, and that one paper deals with non-malignant disease, not mesothelioma.²⁹ Finally, Dr. Elizabeth Anderson is neither a medical doctor nor an epidemiologist,³⁰ and her testimony related solely to a criticism of the Committee’s experts for relying on “Public Health Agency Statements” as part of the bases for their opinions.

B. There is No “Safe” Type of Asbestos Nor Any “Safe” Level of Asbestos Exposure.

There is no dispute that asbestos causes mesothelioma, and that the great majority of mesotheliomas are demonstrably caused by asbestos. The link between asbestos exposure and mesothelioma is so strong that mesothelioma is called a “signature or sentinel disease” of asbestos exposure. As noted epidemiologist Dr. Harvey Checkoway explained:

Certain conditions, known as “sentinel” health events, are so closely associated with occupational exposures that the occurrence of any cases serves as an indication of an occupational hazard. Malignant mesothelioma (which is nearly

²⁷ Garabrant Tr. 314-316 (July 23, 2013).

²⁸ Sporn Tr. 443 (July 23, 2013).

²⁹ Weill Tr. 1016-18 (July 25, 2013).

³⁰ Anderson Tr. 4412 (August 12, 2013)

always attributable to asbestos exposure), silicosis, and adult lead poisoning, fit this description.³¹

All asbestos-related diseases have long latency periods, during which they develop undetected at the cellular level in the human body. Typically, they do not become manifest for ten to fifty years, or even longer, after exposure.³² The latency period for development of any asbestos-related disease is largely dependent on the frequency and intensity of the dose of asbestos exposure; the higher the dose, the shorter the latency period.³³

It is the consensus of the scientific community that there is no safe level or threshold of acceptable exposure to chrysotile or other types of asbestos fibers below which mesothelioma will not occur.³⁴ Indeed, no amount of exposure to asbestos above the background levels present

³¹ H. Checkoway, N. Pearce & D. Kriebel, *Research Methods in Occupational Epidemiology* 248 (2d ed. 2004) (internal citation omitted) (copy attached as Ex. 8).

³² Muriel L. Newhouse & Hilda Thompson, *Mesothelioma of Pleura and Peritoneum Following Exposure to Asbestos in the London Area*, 22 Brit. J. Indus. Med. 261, 265 (1965) (latency period can be as long as 55 years); C. Bianchi et al., *Latency Periods In Asbestos-Related Mesothelioma of the Pleura*, 6 Eur. J. Cancer Prevention 162, 162 (1997) (“1997 Bianchi Paper”) (the latency period in one case was 72 years).

³³ See 1997 Bianchi Paper, *supra* note 32, at 162.

³⁴ U.S. Environmental Protection Agency (“EPA”), *Airborne Asbestos Health Assessment Update* at 93, 95, 173-74 (June 1986) (“1986 EPA Airborne Asbestos Health Assessment”) (copy attached as Ex. 9); U.S. Department of Health & Human Services (“DHHS”) & National Institute for Occupational Safety & Health (“NIOSH”), *Workplace Exposure to Asbestos, Review and Recommendations*, Pub. No. 81-103, 3 (Nov. 1980) (“[A]ll levels of asbestos exposure studied to date have demonstrated asbestos-related disease, and a linear relationship appears to best describe the shape of the dose-response curve. These considerations led the committee to conclude that there is no level of exposure below which clinical effects do not occur. Third, the absence of a threshold is further indicated by the dramatic evidence of asbestos-related disease in members of asbestos-worker households and in persons living near asbestos-contaminated areas. These household and community contacts involved low level and/or intermittent casual exposure to asbestos. Studies of duration of exposure suggest that even at very short exposure periods (1 day to 3 months) significant disease can occur.”) (“1980 DHHS/NIOSH Review & Recommendations”) (copy attached as Ex. 10); NIOSH, *Revised Recommended Asbestos Standard* (Dec. 1976) (noting that mesothelioma can be caused by occupational exposure to asbestos as brief as one day) (copy attached as Ex. 11); *Asbestos, asbestosis, and cancer: the Helsinki criteria for diagnosis and attribution*, 23 Scand. J. Work Envtl. Health 311, 313 (1997) (the “Helsinki Criteria”) (copy attached as Ex. 12); British Thoracic Society, *Statement on malignant mesothelioma in the United Kingdom*, Thorax 56, 250, 252 (2001) (“There is no evidence for a threshold dose of asbestos below which there is no risk. . . . All types of asbestos can cause mesothelioma.”) (“2001 British Thoracic Society”) (copy attached as Ex. 13); National Cancer Institute, Fact Sheet: Asbestos Exposure and Cancer Risk, 1 (May 1,

in ambient air has been demonstrated to be too low to induce mesothelioma. As the British Thoracic Society states: “[t]here is no evidence for a threshold dose of asbestos below which there is no risk.”³⁵ Indeed, the British Government has determined to treat any mesothelioma as an asbestos related disease as long as the victim was exposed to asbestos “at a level above that commonly found in the environment at large.”³⁶

The reason for the consensus that there is no “safe” threshold is that the medical literature is replete with numerous case reports and case series of mesothelioma caused by as little as a few months, weeks, or even days of asbestos exposure,³⁷ as well as analytical epidemiology which demonstrates that asbestos exposures at very low levels (i.e., less than 0.15 fiber years) are sufficient to cause mesothelioma.³⁸ Mechanistic and animal studies support the consensus that a

2009) (copy attached as Ex. 14); World Health Organization (“WHO”), *Elimination of asbestos-related diseases* 2 (2006) (“Mesotheliomas have been observed after occupational exposure to crocidolite, amosite, tremolite and chrysotile, as well as among the general population living in the neighbourhood of asbestos factories and mines and in people living with asbestos workers. . . . No threshold has been identified for the carcinogenic risk of chrysotile.”) (“2006 WHO Paper”) (copy attached as Ex. 15).

³⁵ 2001 British Thoracic Society, *supra* note 34, at 250-65.

³⁶ British Department for Work & Pensions, *Asbestos-related diseases* 14 (July 2005) (copy attached as Ex. 16).

³⁷ See, e.g., E. Skammeritz et al, *Asbestos Exposure and Survival in Malignant Mesothelioma: A Description of 122 Consecutive Cases at an Occupational Clinic*, 2 Int’l J. Occup’l & Env’tl. Med. 224, 228-29 (Oct. 2011) (noting that for some patients the total asbestos exposure was “a few days.”) (copy attached as Ex. 17); Morris Greenberg & T.A. Lloyd Davies, *Mesothelioma Register 1967-68*, 31 Brit. J. Indus. Med. 91, 96, 103 (1974) (documenting mesothelioma following an asbestos exposure of 3 weeks in one case and 1 day in another) (copy attached as Ex. 18); Newhouse & Thompson, *Mesothelioma of Pleura and Peritoneum Following Exposure to Asbestos in the London Area*, 22 Brit. J. Indus. Med. 261, 261-66 (1965) (two cases with 2 months or less exposure to asbestos) (copy attached as Ex. 19); M. Maxwell Borow, M.D. et al., *Mesothelioma following Exposure to Asbestos: A review of 72 Cases*, 64 Chest 641 (Nov. 1973) (copy attached as Ex. 20); K. Browne & W.J. Smither, *Asbestos-related mesothelioma: factors discriminating between pleural and peritoneal sites*, 40 Brit. J. Ind. Med. 145-152 (1983) (copy attached as Ex. 21); 1980 DHHS/NIOSH Review & Recommendations, *supra* note 34 (“Studies of duration of exposure suggest that even at very short exposure periods (1 day to 3 months) significant disease can occur.”).

³⁸ Y. Iwatsubo et al., *Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos Exposure in a French Population-based Case-Control Study*, 148 Am. J Epidemiology 133, 141 & 139 tbl.5 (1998) (“A significant excess of mesothelioma was observed for levels of cumulative exposure that were probably far below the limits adopted in most industrial countries during the 1980s.”) (copy attached

day of asbestos exposure, including exposure to chrysotile, can cause mesothelioma.³⁹ Studies of exposures in French and German registries revealed a significant excess number of mesotheliomas at levels of cumulative exposure that were far *below* the limits adopted in most industrial countries during the 1980s.⁴⁰

The “Everatt Study,” a study regarding chrysotile asbestos exposure among respiratory cancer patients in Lithuania, found that three out of the four patients who developed mesothelioma had total exposure levels of less than 0.01 fibers-years – levels that can be reached in only a few days of occupational exposure to asbestos.⁴¹ Accordingly, any attempts to postulate “safe” thresholds for asbestos exposure should be dismissed as “logical nonsense.”⁴² Dr. Welch testified that, based upon both analytical epidemiology studies and mesothelioma case series such as the Skammeritz study and the Greenberg-Davies study, it has been demonstrated that asbestos exposures as brief as a few days cause mesothelioma in humans.⁴³ With respect to

as Ex. 22); Klaus Rödelberger et al., *Asbestos and Man-Made Vitreous Fibers as Risk Factors for Diffuse Malignant Mesothelioma: Results From a German Hospital-Based Case-Control Study*, 39 Am. J. Indus. Med. 262, 269, 273 (2001) (“**2001 Rödelberger Paper**”) ([0.15 asbestos fibers per cubic centimeter (“f/cc/yr” or “f/yr”)] creates an almost eight fold increased risk of mesothelioma, and noting that “results confirm the distinct dose-response relationship of the interview study even at a cumulative exposure below 1 fiber year. They clearly support the outcome of the French mesothelioma case-control study.”) (copy attached as Ex. 23); P. Rolland et al., *Risk of pleural mesothelioma: A French population-based case-control study (1998-2002)*, Abstract of Presentation (OR 2.8, 95% CI 1.7-4.7) (copy attached as Ex. 24).

³⁹ See generally IARC, Asbestos (Chrysotile, Amosite, Crocidolite, Tremolite, Actinolite and Anthophyllite) (2012) (“2012 IARC Paper”) (copy attached as Ex. 25) and studies cited therein.

⁴⁰ Iwatsubo, *supra* note 38; **2001 Rödelberger Paper**, *supra* note 38.

⁴¹ Rūta P. Everatt et. al, *Occupational Asbestos Exposure Among Respiratory Cancer Patients in Lithuania*, 50 Am. J. Indus. Med. 455-63 (2007) (copy attached as Ex. 26).

⁴² John T. Hodgson & Andrew Darnton, *The Quantitative Risks of Mesothelioma and Lung Cancer in Relation to Asbestos Exposure*, 44 Am. Occup’l Hygiene 565, 583 (2000) (copy attached as Ex. 27).

⁴³ Welch Tr. 2123:9-24.

chrysotile specifically, the Madkour and Pan studies demonstrate that very low levels of chrysotile exposure (such as living a mile away from a chrysotile plant) cause mesothelioma.⁴⁴

Moreover, it is generally accepted in the medical and scientific community that once you have a mesothelioma patient with a history of occupational, domestic or para-occupational exposure, the mesothelioma is attributed to asbestos exposure. Under the Helsinki Criteria for the Diagnosis and Attribution of Mesothelioma to Asbestos Exposure⁴⁵ (which was written in 1997 by a group of 19 scientists from differing disciplines who collectively had published over 1,000 articles about asbestos and disease) and the generally accepted science on which it is based, there is no need to quantify any particular occupational, para-occupational or domestic asbestos exposure to assess mesothelioma causation because 1) any “occupational level” exposure results in fiber levels thousands of times higher than ambient air, 2) no safe or threshold level of exposure to asbestos has ever been identified, and 3) asbestos exposures as short in duration as a few days have been shown to cause mesothelioma.

Epidemiology has also shown that a person’s risk of contracting mesothelioma becomes greater as exposure to asbestos increases and that the more exposure a person has the shorter the latency period between the first exposure to asbestos and manifestation of mesothelioma.⁴⁶ Accordingly, cumulative dose best explains the increased risk of mesothelioma in the

⁴⁴ *Id.* at 2124:13 – 2125:16.

⁴⁵ Helsinki Criteria, *supra* note 34.

⁴⁶ Claudio Bianchi et al., *Asbestos Exposure in Malignant Mesothelioma of the Pleura: A Survey of 557 Cases*, 39 *Indus. Health* 161, 166 (2001) (“In general, there was an inverse relationship between intensity of exposure and duration of the latency period.”) (“2001 Bianchi Paper”) (copy attached as Ex. 28); V. Neumann et al., *Malignant mesothelioma – German mesothelioma register 1987-1999*, 74 *Int’l Archives Occup’l & Envtl. Health* 383, 388 (2001) (“There was a trend towards shorter latency periods in the presence of higher asbestos burdens.”) (copy attached as 29).

population.⁴⁷ Multiple epidemiological studies designed to determine the lowest quantum of exposure to asbestos capable of causing mesothelioma have established that miniscule *cumulative* lifetime exposure levels (i.e., a level of asbestos exposure that can be reached in just a few days of working with asbestos or asbestos containing products) can cause mesothelioma.⁴⁸

C. Exposure to Chrysotile Asbestos, Including Chrysotile Asbestos from Gaskets and Packing, Causes Mesothelioma and Other Asbestos-related Disease.

The general causation question of whether chrysotile asbestos causes mesothelioma in humans has been examined in the scientific literature from the perspective of many different disciplines including epidemiology, toxicology, animal experiments, medical research, industrial hygiene, and fiber analysis. The general consensus in the scientific community is that all commercially available fiber types of asbestos, including the serpentine form chrysotile, cause mesothelioma.⁴⁹ All types of asbestos cause all of these diseases. As noted in Dr. Welch's 2007

⁴⁷ 2 Dail & Hammar, *Pulmonary Pathology* 558, 587 (3d. ed. 2008) (“[W]hen there are multiple asbestos exposures, each contributes to cumulative exposure and hence to the risk and causation of MM [malignant mesothelioma].”) (copy attached as Ex. 30); Jean Bignon, Yunico Iwatsubo, Francoise Galateau-Salle & Alain J. Valleron, *History and Experience of Mesothelioma in Europe*, Mesothelioma 29, 36 (Bruce W. Robinson & A. Philippe Chahinian eds. 2002) (copy attached as Ex. 31).

⁴⁸ Iwatsubo, *supra* note 38; **2001 Rödelberger Paper**, *supra* note 38.

⁴⁹ See, e.g., IARC, *A review of human carcinogens – Part C: metals, arsenic, dusts, and fibres*, 10 Lancet 453, 454 (May 2009) (“Epidemiological evidence has increasingly shown an association of all forms of asbestos (chrysotile, crocidolite, amosite, tremolite, actinolite, and anthrophyllite) with an increased risk of lung cancer and mesothelioma.”) (copy attached as Ex. 32); 2012 IARC Paper, *supra* note 39, 238 (“Although all forms of asbestos can cause mesothelioma, there is considerable evidence that the potency for the induction of mesothelioma varies by fibre type, and in particular that chrysotile asbestos is less potent than amphibole forms of asbestos.”); DHHS, *Toxicological Profile for Asbestos*, Agency for Toxic Substances and Disease Registry (2001) (copy attached as Ex. 33); Occupational Safety & Health Administration (“OSHA”), *Occupational Exposure to Asbestos*, 29 C.F.R. 1910, Vol. 59, No. 153, 40979 (Aug. 10, 1994) (“There are at least three reasons for OSHA’s decision not to separate fiber types. First, OSHA believes that the evidence in the record supports similar potency for chrysotile and amphiboles with regard to lung cancer and asbestosis. The evidence submitted in support of the claim that chrysotile asbestos is less toxic than other asbestos fiber types is related primarily to mesothelioma. This evidence is unpersuasive, and it provides an insufficient basis upon which to regulate that fiber type less stringently.”) (copy attached as Ex. 34); WHO, *Chrysotile Asbestos*, Environmental Health Criteria 203 (1998) (exposure to chrysotile asbestos poses increased risks for asbestosis, lung cancer and mesothelioma in a dose-dependent manner) (copy attached as Ex. 35); 2006 WHO Paper, *supra* note 34, 2

mesothelioma causation paper, co-signed by 51 other medical, industrial hygiene, epidemiology, and toxicology experts from around the world: “There is general agreement among scientists and health agencies” that “[e]xposure to any asbestos type (i.e., serpentine [chrysotile] or amphibole) can increase the likelihood of lung cancer, mesothelioma, and nonmalignant lung and pleural disorders.”⁵⁰

Dr. Brody also testified that chrysotile asbestos is “highly toxic to human and animal mesothelial cells.”⁵¹ Dr. Brody testified that inhaled asbestos fibers have the ability to damage

(“Mesotheliomas have been observed after occupational exposure to crocidolite, amosite, tremolite and chrysotile, as well as among the general population living in the neighbourhood of asbestos factories and mines and in people living with asbestos workers. . . . No threshold has been identified for the carcinogenic risk of chrysotile.”); Enrico Pira et al., *Mortality from Cancer and Other Causes in the Balangero Cohort of Chrysotile Asbestos Miners*, *Occup’l Envtl. Med.* 3-5 (July 29, 2009) (copy attached as Ex. 36); Dana Loomis, John M. Dement, Susanne H. Wolf & David B. Richardson, *Lung Cancer Mortality and Fibre Exposures among North Carolina Asbestos Textile Workers*, 66 *Occup’l Envtl. Med.* 535-42 (Mar. 11, 2009) (copy attached as Ex. 37); Xiaorong Wang et al., *Cause-specific mortality in a Chinese chrysotile textile worker cohort*, *J. Japanese Cancer Ass’n* (2012) (copy attached as Ex. 38); Eiji Yano et al., *Cancer Mortality among Workers Exposed to Amphibole-Free Chrysotile Asbestos*, 154 *Am. J. Epidemiology* 538-43 (Sept. 15, 2001) (identifying a case of peritoneal mesothelioma in a worker with exposure to pure chrysotile with negligible amphibole contamination) (copy attached as Ex. 39); Giorgio Piolatto et al., *An update of cancer mortality among chrysotile asbestos miners in Balangero, northern Italy*, 47 *Brit. J. Indus. Med.* 810-14 (1990) (copy attached as Ex. 40); D. Mirabelli et al., *Excess of mesotheliomas after exposure to chrysotile in Balangero, Italy*, 65 *Occup’l Envtl. Med.* 815-19 (2008) (copy attached as Ex. 41); Letter from Dr. Agnes Kane, Chair, Asbestos Committee Science Advisory Board, to the Honorable Stephen L. Johnson, Administrator, EPA (Nov. 14, 2008) (SAB Consultation on EPA’s Proposed Approach for Estimation of Bin-Specific Cancer Potency Factors for Inhalation Exposure to Asbestos, EPA-SAB-09-004) (“Dr. Kane Letter”) (copy attached as Ex. 42); William J. Nicholson, *The Carcinogenicity of Chrysotile Asbestos – A Review*, 39 *Indus. Health* 57-64 (2001) (copy attached as Ex. 43).

⁵⁰ Laura S. Welch, MD et al., *Asbestos Exposure Causes Mesothelioma, But Not This Asbestos Exposure: An Amicus Brief to the Michigan Supreme Court*, 13 *Int’l J. Occup’l & Envtl. Health* 318, 318 (2007) (“**2007 Welch Paper**”) (alterations in original) (copy attached as Ex. 44). As the authors note, “[m]any other reviews support this conclusion, such as those from the American Conference of Governmental Industrial Hygienists, the American Thoracic Society, the Environmental Protection Agency, the International Agency for Research on Cancer, the National Toxicology Program, the Occupational Safety and Health Administration, the Consumer Products Safety Commission (CPSC), the World Health Organization, and the World Trade Organization. This scientific consensus is also reflected in the Consensus Report of the 1997 Helsinki Conference, and publications from the American Cancer Society and the National Cancer Institute of the National Institutes of Health.” *Id.* (footnote call numbers omitted).

⁵¹ Brody Tr. 1858:13-22.

the genetic composition of cells.⁵² Wherever asbestos fibers travel in the human body, they are capable of causing injuries at the cellular level. Sometimes the asbestos fibers will damage the cells and cause the cell death.⁵³ With respect to cancer, however, the greater concern occurs when asbestos fibers change the genetic material within a cell which survives and then passes on these asbestos-induced genetic errors through cellular division. This occurs when asbestos fibers bind with the DNA in dividing cells which results in genetic mutations to the chromosomes of the daughter cells. Over the course of many years, this genetic damage is compounded and magnified due to additional damage to future generations of the damaged cell. Cancer develops, decades later, when a single cell with sufficient genetic errors in combination for that person grows out into a tumor.⁵⁴

While many asbestos fibers are originally deposited in the breathing spaces of the lung, Dr. Brody demonstrated they do not all remain there. Instead, asbestos fibers have been shown to translocate from the lung into the fluid flow of the body (blood and lymphatic systems).⁵⁵ In order for cancer to develop, Dr. Brody testified that the asbestos fibers have to reach the target cell, that is, the cell from which the disease develops. In the case of pleural mesothelioma, the target cells are located on the surface of the pleura of the lung.⁵⁶ Because of the anatomy of the lymph flow and the physical dimensions of chrysotile fibers, chrysotile fibers are the most common type of asbestos fiber located at the surface of the pleura of the lung- the target site for pleural mesothelioma.⁵⁷ Based on various published studies performed by Dr. Brody, he further

⁵² *Id.* at 1838:5-15, 1847-1857.

⁵³ *Id.* at 1853:24 – 1854:9.

⁵⁴ *Id.* at 1852:2 – 1857.

⁵⁵ *Id.* at 1833:20 – 1834.

⁵⁶ *Id.* at 1833:20 – 1834:16.

⁵⁷ *Id.* at 1834:17 – 1835:6.

opined that chrysotile asbestos is cytotoxic to human and animal macrophages which kill cells that function as a key component of the body's natural defense mechanism.⁵⁸ Dr. Brody confirmed all the asbestos fibers types, including chrysotile, have been shown to cause mesothelioma as well as all other asbestos-related disease in humans.⁵⁹

Several recent epidemiology studies have further strengthened the link between chrysotile asbestos and mesothelioma. Most recently, on May 20, 2013 and June 27, 2013, the American Journal of Industrial Medicine and the British Journal of Cancer issued medical publications that once again support the opinion that exposure to chrysotile asbestos can cause mesothelioma.⁶⁰

Garlock has expressly acknowledged in its Material Safety Data Sheets ("MSDS") that chrysotile asbestos causes mesothelioma.⁶¹ But in litigation, including in these bankruptcy cases, Garlock asserts that its products cannot have contributed to asbestos-related illnesses because, for the most part, they are made with chrysotile asbestos, which Garlock asserts is harmless. But while this is indeed the position of the asbestos industry, it is not the position of independent experts. It should be noted that, while the majority of Garlock's gaskets and valve packing material were made with chrysotile (white) asbestos, Garlock admits that a percentage of its gaskets were made with crocidolite (blue) asbestos.⁶² Moreover, almost all "chrysotile" asbestos products are contaminated with the amphibole tremolite.⁶³

⁵⁸ *Id.* at 1858:23 – 1860:4.

⁵⁹ *Id.* at 1858:16 – 1860:18.

⁶⁰ Cora R. Roelofs et al., *Mesothelioma and Employment in Massachusetts: Analysis of Cancer Registry Data 1988-2003*, Am. J. of Indus. Med. (May 20, 2013) (copy attached as Ex. 45); *see also* V. McCormack et al., *Estimating the asbestos-related lung cancer burden from mesothelioma mortality*, Brit. J. of Cancer (2012) ("2012 McCormack Paper") (copy attached as Ex. 46); V. McCormack et al., *Reply: Comment on 'Estimating the asbestos-related lung cancer burden from mesothelioma mortality'*, Brit. J. of Cancer (June 27, 2013) ("2013 McCormack Paper") (copy attached as Ex. 47).

⁶¹ *See* ACC Exs. 3 & 4, Garlock's Material Data Safety Sheets.

⁶² *See* Def. Garlock's Third Am. Resps. to Pl.'s Interrogs. & Requests for Produc. at 20 (Answer to Interrog. No. 10), *In re All Asbestos-Related Personal Injury or Death Cases Filed in or to be Filed in*

In any event, there is no scientific evidence that chrysotile is significantly less potent carcinogen than amphibole asbestos. The epidemiological data is sufficient to permit quantification of the risk of contracting various diseases from exposure to asbestos in general. However, efforts to determine the extent to which some types of asbestos fibers are more likely to cause mesothelioma or lung cancer have been severely hampered by lack of historical exposure data. Although some studies have found that crocidolite (an amphibole) may be more potent than chrysotile on a fiber-by-fiber basis, the available data is simply not sufficient to quantify the relative potency of fiber types, or to determine whether some fiber types are significantly less potent than others. For that reason, after an exhaustive analysis of the issue, the EPA stated in 2008 that it would adhere to standards that treat all asbestos fiber types as having equal potency for causing mesothelioma and lung cancer.⁶⁴ Indeed, many scientific groups have

Harris County, Texas, Cause No. 2004-03964 (Harris Cnty. Dist. Ct. Sep. 8, 2008) (copy attached as Ex. 48); **Garlock's Asbestos-Containing Product List** (copy attached as Ex. 49).

⁶³ See Sporn Tr. 444 (agreeing that “some tremolite is unavoidably retained in the milled final product”). As Doll & Peto have stated, “It is not practicable to remove tremolite from chrysotile for commercial purposes and any distinction between the effects of chrysotile and tremolite may, therefore, be considered academic, unless supplies of chrysotile can be obtained in which little or no tremolite is present.” Richard Doll & Julian Peto, *Effects on Health of Exposure to Asbestos* 17 (London: Her Majesty's Stationery Office 1985) (copy attached as Ex. 50).

⁶⁴ Garlock relies on the work of D.W. Berman and K.S. Crump to support its assertion that chrysotile is a less potent carcinogen than amphiboles on a fiber-by-fiber basis. See Garlock Br. 29, n.78 (citing D.W. Berman & K.S. Crump, *A Meta-Analysis of Asbestos-Related Cancer Risk That Addresses Fiber Size and Mineral Type*, 38 Critical Res. Toxicology 49, 49 (2008)). But the Berman & Crump analysis and methodology have been thoroughly discredited. For example, the EPA and other governmental organizations (including a National Science Advisory Board (“**SAB**”) charged with reviewing the issue) have on several occasions over the past 30 years – most recently in 2008 – considered all of the available scientific literature relevant to whether some types of asbestos varieties are a more potent cause of mesothelioma or lung cancer on a fiber-per-fiber basis than others. On each occasion, the EPA has concluded there is simply not enough evidence to quantify the relative potencies of different fiber types. Thus, the EPA has adhered to standards that assume that all asbestos fiber types have equal mesothelioma and lung cancer potency, and that the threshold exposure level for the induction of cancer is so low that it cannot be measured. See 1986 EPA Airborne Asbestos Health Assessment, *supra* note 34, at 93, 95, 173-74. The chronology of the government's involvement with the various attempts to quantify asbestos fiber potency by fiber type or length is comprehensively and compellingly reported in Michael A. Silverstein et al., *Historical Perspective, Developments in Asbestos Cancer Risk Assessment*, American Journal of Industrial Medicine 1, 1-9 (2009). See also Dr. Kane Letter, *supra* note

concluded that there is no way to quantify differences between fiber types, and the most recent publication by the British Journal of Cancer suggests that chrysotile is far more potent for causing mesothelioma than originally thought.⁶⁵

Garlock is simply wrong when it asserts that “there are no 2.0 studies demonstrating that pure chrysotile fibers cause mesothelioma.”⁶⁶ There are several such studies. For example, in a 2009 cohort epidemiological study of North Carolina workers exposed to chrysotile asbestos, Drs. Dement and Loomis documented almost 11 times excess risk due to exposure to chrysotile.⁶⁷ Also in 2009, a study by Pira et al, found a significant excess risk of mesothelioma from chrysotile mined in Balangero Italy, as did several Chinese studies which examined the risk of mesothelioma posed by exposure to chrysotile.⁶⁸

Dr. Welch also testified that while amphibole forms of asbestos are likely more potent in causing mesothelioma on a fiber per fiber basis, exposure to chrysotile asbestos can and does cause mesothelioma in humans.⁶⁹ Dr. Welch also testified about how cumulative asbestos exposure causes mesothelioma, and that if someone was exposed to both a chrysotile containing product and products containing amphiboles, it is not medically appropriate to exclude the chrysotile exposures as contributing to cause the mesothelioma.⁷⁰

49 (stating that the EPA continues to use the method approved in 1986); Letter from the Honorable Stephen L. Johnson, Administrator, EPA, to Dr. Agnes Kane, Chair, Asbestos Committee Science Advisory Board (Dec. 29, 2008) (noting that, in light of the SAB’s concerns about the quality of available exposure data, the EPA would not adopt the Berman & Crump 2008 analysis) (copy attached as Ex. 51).

⁶⁵ 2012 McCormack Paper, *supra* note 60; *see also* Welch Tr. 2122-2126.

⁶⁶ Garlock Br. 29.

⁶⁷ Loomis et al., *supra* note 49, at 8. A “cohort study” is a longitudinal study in which a particular outcome, such as death from cancer, is compared in groups of people who are alike in most ways but differ by a certain characteristic, such as asbestos exposure.

⁶⁸ Wang et al., *supra* note 49; *see generally*, Welch Tr. 2114-26.

⁶⁹ Welch Tr. 2104:8 – 2105:2, 2188:1-8.

⁷⁰ *Id.* at 2131:25 – 2140:25, 2148-2152.

In discussing the foundations of her opinion, Dr. Welch testified about various epidemiology studies conducted all over the world showing an increased risk of mesothelioma in cohorts of people exposed to chrysotile asbestos.⁷¹ Among the cohorts of chrysotile exposed workers discussed was six mesothelioma death cases in miners working at a large open air chrysotile mine in Balangero, Italy which did not contain any tremolite contamination.⁷² A follow-up study revealed 27 mesothelioma cases diagnosed, not only among miners, but in other individuals exposed to chrysotile asbestos from the mine who were not direct employees of the mine. Dr. Welch also discussed the study of workers in a North Carolina textile factory where there were eight cases of mesothelioma that were related to the miners' exposure to chrysotile asbestos.⁷³

D. Claimants' Exposures to Asbestos from Working with and Around Garlock's Asbestos-containing Packing and Gaskets.

For decades, Garlock used asbestos in the manufacture of its gaskets and valve packing materials. A gasket is used to form a seal between two non-moving surfaces to prevent liquid or gas from leaking. Valve packing material forms a seal between a moving surface (such as a valve stem or pump shaft) and a stationary surface. Asbestos fibers are usually not released from the gaskets and valve packing when they remain in place and undisturbed. However, anyone removing or replacing a gasket or valve packing materials manufactured by Garlock is exposed to asbestos fibers.

Most exposure to asbestos from Garlock's products occurred when workers were involved in replacing gaskets used on piping, which ranged from two to sixty inches in diameter. The Court in this proceeding heard testimony from experts on both sides who had reviewed

⁷¹ *Id.* at 2111:10 – 2121:10.

⁷² *Id.* at 2118:2-17.

⁷³ *Id.* at 2118:18 – 2121:10.

hundreds of deposition transcripts concerning the tools used and processes followed to remove a gasket from a flange, or in the case of James Shoemaker, who oversaw the work of thousands of pipefitters in his career, had personally observed workers remove gaskets on “thousands” of occasions.⁷⁴ After the flange was separated, the old gasket had to be removed and a new gasket fitted, as a compressed gasket cannot be reused. In many cases, the old gasket would be dried out and firmly stuck to the seating areas of the flange, such that removal required cleaning with a power-driven wire brush, as well as scraping with a variety of tools. The removal process produced considerable dust, particularly during wire-brushing.⁷⁵ Gasket removal was often done in confined quarters or with the pipes overhead. It could take up to a full workday to remove the gaskets from a large pipe.

Re-assembling the flange involved preparing a new gasket. In most cases, the worker cut the new gasket from rolls of sheet gasket material. The worker cut the sheet and placed it against the flange to mark the bolt holes and flange openings. Bolt holes were cut out with punches and knives were used to cut out the flange openings. This process also could also produce substantial amounts of asbestos-laden dust.

E. The Level of Asbestos Exposure from Even a Few Weeks of Working Around Gaskets and Packing is Thousands of Times Higher than “Ambient” Air.

Garlock has long claimed that exposures to its products are “negligible” because the asbestos in its products is encapsulated, and that chrysotile asbestos in its products is harmless. This is contradicted not only by Dr. Longo’s studies, but by numerous measurements of asbestos exposure from gaskets done by industrial corporations in the real world not in order to defend themselves in litigation, but simply to understand what would happen if a gasket was

⁷⁴ Shoemaker Tr. 1643 (July 29, 2013).

⁷⁵ See Shoemaker testimony generally.

significantly damaged in removal activities or otherwise. The Court heard about some of those tests during the testimony of Dr. Longo and the cross-examination of Mr. Henshaw.⁷⁶

In reality, Garlock was well-aware of the dangers of asbestos fibers, tried to conceal those dangers from the general public, and chose not to conduct studies to determine how much asbestos was emitted by its products when used under real-world conditions, preferring to remain ignorant.⁷⁷ Elsewhere, however, Garlock has admitted in its MSDS, and independent industrial hygiene studies demonstrate, that high levels of asbestos fibers are released into the air when a gasket is cut, scraped or abraded while being created, fitted or removed. Dr. Brodtkin testified regarding his knowledge of the medical and science literature, including those articles pertaining to the dangers of asbestos-containing and gaskets and packing.⁷⁸ Dr. Brodtkin also testified as to the literature indicating that gaskets were known to cause disease as early as the 1930s.⁷⁹

Garlock, however, asserts in litigation that its products could not have caused mesothelioma or other asbestos-related diseases because the asbestos in its gaskets is “encapsulated,” rather than “friable” (i.e., easily crumbled by hand pressure). But “encapsulation” means only that the asbestos is bound with or coated by plastic or other material; it does not mean that it is impossible for asbestos fibers to be released. As Mr. Henshaw acknowledged on cross-examination, and Garlock itself has acknowledged in its MSDS for asbestos gaskets, if the encapsulated asbestos is disturbed, by shearing, cutting,

⁷⁶ See Longo Tr. 1514-1520 (July 29, 2013) (discussing gasket studies by Newport News shipbuilding, the Industrial Hygiene Foundation (“IHF”) for Garlock, and Shell); Henshaw Tr. 921 (July 25, 2013) (discussing study by Dow Chemical).

⁷⁷ See ATI Air Hygiene Committee Meeting Minutes at 1 (Mar. 7, 1957) (ACC Ex 3313) (a proposal to study lung cancer in asbestos workers is voted down because the committee believes it “would stir up a hornet’s nest and put the whole industry under suspicion”).

⁷⁸ Brodtkin Tr. 1926:22 – 1927:14.

⁷⁹ *Id.* at 1927:15 – 1929:18.

punching, tearing, sanding, scraping, brushing, abrading or grinding as the gaskets and valve packing materials are cut and installed, or as they are removed and replaced, asbestos fibers will be emitted into the air, where they can be inhaled and cause injury.⁸⁰ Moreover, Garlock's assertion that chrysotile asbestos is harmless is contradicted by Garlock's own statements elsewhere, and has been completely discredited by the scientific and medical community: there is no "safe" type of asbestos, and no "safe" level of exposure.

It has also been demonstrated in the industrial hygiene literature that removal of asbestos containing gaskets used for sealing equipment and related piping flanges has been shown to release respirable chrysotile asbestos fibers at levels thousands to tens of thousands of times higher than the ambient air (even using the low end of the ranges in the published studies). An industrial hygiene study conducted by the U.S. Navy, in which 14 air samples were collected in the breathing zone of workers during the removal of asbestos gaskets using a hand scraper, found exposure levels ranging from less than 0.06 fibers per cubic centimeter ("f/cc") to 0.39 f/cc, with an average of 0.13 f/cc.⁸¹ Another published study by industrial hygienists from Chevron Corporation found exposures ranging from 0.11 f/cc to 0.33 f/cc when removing sheet gaskets using dry scraping and brushing.⁸² Additional studies found that when gasket material was removed with a hand-held or power-driven wire brush – as was common practice – much higher

⁸⁰ Henshaw Tr. 894; Garlock, Inc.'s Material Safety Data Sheets (ACC Ex. 3 and ACC 4) for Compressed Asbestos Sheets ("Haz[ard] would arise only if prod[uct]s were subjected to mech[anical] actions that would cause asbestos fibers to be rel[ea]sed] from elastomer compound matrix. Inhal[ation] of such airborne fibers can cause well-known long term ef[fec]ts of asbestosis, lung cancer & mesothelioma.").

⁸¹ See L.R. Liukonen et al., Naval Regional Medical Center, Occupational & Environmental Health Services, *Asbestos Exposure from Gasket Operations* 41 (1978).

⁸² See Robert T. Cheng & Henry J. McDermott, *Exposure to Asbestos from Asbestos Gaskets*, 6 Applied Occup'l & Env'tl. Hygiene 588, 590 (1991).

levels of respirable asbestos-laden dust could be created.⁸³ Dr. Longo's peer reviewed paper, for example, found concentrations of asbestos fibers released from removal of gaskets of 2.1 f/cc to 31.0 f/cc, with an eight hour time-weighted average ("**TWA**") of 2.3 f/cc.⁸⁴

A worker experiences one "fiber-year" of exposure when he or she breathes air containing one asbestos fiber per cubic centimeter (1 f/cc) eight hours a day for 250 days. Exposure level reaches 0.15 fiber-years (the level at which case-controlled epidemiological studies have seen an almost eight-fold increased risk for the development of mesothelioma)⁸⁵ at an average exposure level of 1 f/cc in just 37.5 days. At an average exposure level of 2 f/cc (the low end of the range of exposure levels when an electric wire brush is used to remove old gaskets),⁸⁶ the cumulative level of exposure would reach 0.15 fiber-years in less than 20 days.⁸⁷

Thus, there is ample evidence that substantial levels of respirable asbestos-containing dust are produced when asbestos-containing gaskets such as Garlock's are fitted or removed, particularly when a power scraper or wire brush is used.

Dr. Brodtkin and Dr. Welch also both testified that, based upon both analytical epidemiology studies and mesothelioma case series, it has been demonstrated that asbestos

⁸³ See J.R. Millette & M.D. Mount, *Asbestos-Containing Sheet Gaskets and Packing*, 12 Sourcebook on Asbestos Diseases 153, 165 (G.A. Peters & B.J. Peters eds. 1996); William E. Longo et al., *Fiber Release During the Removal of Asbestos-Containing Gaskets: A Work Practice Simulation*, 17 Applied Occup'l & Env'tl. Hygiene 55, 57-58, 60 (2002) ("**2002 Longo Paper**") (copy attached as Ex. 52).

⁸⁴ **2002 Longo Paper**, *supra* note 83, at 58. An eight hour TWA is an average value of exposure over the course of an 8 hour work shift.

⁸⁵ See **2001 Rödelsperger Paper**, *supra* note 38.

⁸⁶ See **2002 Longo Paper**, *supra* note 83, at 58.

⁸⁷ By contrast, the average level of asbestos fibers in the ambient air (often referred to as the "background level") has been measured at .00001 f/cc (see Agency for Toxic Substances & Disease Registry, U.S. Department of Health & Human Services, *Toxicological Profile for Asbestos*, 3 (2001)), up to .00003 f/cc (the high end of the range). It would take several lifetimes of continuous exposure at this level to reach 0.15 "fiber-years" of exposure.

exposures, including low levels of chrysotile exposure as brief as a few days, can cause mesothelioma in humans.⁸⁸ In relation to asbestos-containing gasket exposure and medical causation, Dr. Welch testified that even where an individual's exposure to asbestos-containing gaskets is a small part of that individual's cumulative lifetime asbestos exposure, such exposure from asbestos gaskets can still be a contributing factor in causing the individual's asbestos-related disease.⁸⁹

LEGAL ARGUMENT & CITATION OF AUTHORITY

II. THE OPINIONS OF THE COMMITTEE'S EXPERTS SATISFY THE LIBERAL AND FLEXIBLE *DAUBERT* STANDARD FOR ADMISSIBILITY

A. Admissibility Under *Daubert*.

The Federal Rules of Evidence provide that a witness qualified as an expert may testify if “scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue.” Fed. R. Evid. 702. “Rule 702 reflects an attempt to liberalize the rules governing the admission of expert testimony.” *Weisgram v. Marley Co.*, 169 F.3d 514, 523 (8th Cir. 1999), *aff'd* 528 U.S. 440 (2000); *see also Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 588, (1993) (noting the “‘liberal thrust’ of the Federal Rules and their ‘general approach of relaxing the traditional barriers to ‘opinion testimony’” (citing *Beech Aircraft Corp. v. Rainey*, 488 U.S. 153, 169 (1988))). In reliance on this language and the “liberal thrust” of the Federal Rules of Evidence, the Supreme Court held in *Daubert* held that in order for expert testimony to be admissible it must satisfy two requirements – relevance and reliability. *See Daubert*, 509 U.S. at 592-93; Fed. R. Bankr. P. 9017; *Benedi v. McNeil-P.P.C., Inc.*, 66 F.3d 1378, 1383 (4th Cir. 1995); *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141

⁸⁸ Welch Tr. 2124:3 – 2129:5.

⁸⁹ *Id.* at 2183:6-18.

(1999); *see also Milward v. Acuity Specialty Prods. Grp.*, 639 F.3d 11, 29 (1st Cir. 2011) (finding “an important difference between what is unreliable support and what a trier of fact may conclude is insufficient support for an expert’s conclusion” because “the alleged flaws . . . go to the weight of [the expert’s] opinion, not its admissibility”).

To meet the relevancy requirement, the opinion must “fit,” meaning that it must be relevant to, and helpful in resolving, the question before the Court. *Daubert*, 509 U.S. at 591 (ruling that “[e]xpert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful”) (citation and internal quotation marks omitted). To meet the second standard, the Fourth Circuit has noted that a standard of evidentiary reliability is established when the scientific testimony is based on “‘good grounds,’ based on what is known.” *Benedi*, 66 F.3d at 1383. “The proponent of an expert’s opinion has the burden of establishing both branches of this test by a preponderance of the evidence.” *In re Armstrong World Indus., Inc.*, 285 B.R. 864, 202 Bankr. LEXIS 1564, at *12 (Bankr. Del. 2002) (citing *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 744 (3d Cir. 1994)).

In a federal court’s determination of whether to admit expert testimony, it is well established that “[t]he Rules of Evidence embody a strong and undeniable preference for admitting any evidence which has the potential for assisting the trier of fact.” *Kannankeril v. Terminix Int’l, Inc.*, 128 F.3d 802, 806 (3d Cir. 1997) (citing *Holbrook v. Lykes Bros. S.S. Co.*, 80 F.3d 777, 780 (3d Cir. 1996)). The *Daubert* inquiry “focuses on principles and methodology and not on the conclusions they generate. The analysis of the conclusions themselves is for the trier of fact when the expert is subjected to cross-examination.” *Kannankeril*, 128 F.3d at 806 (citing *Paoli*, 35 F.3d at 744) (internal citation omitted). Furthermore, the *Daubert* inquiry does not devolve into a “test of which opinion has the best foundation, but rather whether any

particular opinion is based on valid reasoning and reliable methodology.” *Id.* As the Supreme Court in *Daubert* recognized, “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Daubert*, 509 U.S. at 596.

B. The Committee’s Medical Experts Are Well Qualified.

As discussed above, there is can be no dispute that the Committee’s experts are well qualified to review and understand the medical and scientific literature relevant to asbestos exposure and its ability to cause mesothelioma.

C. The Opinions and Testimony of the Committee’s Medical Experts Are Relevant.

The Committee’s medical expert opinions are relevant (and in the language of *Daubert* “fit” the evidence this Court was presented with) because they directly contradict and respond to the opinions of Garlock’s experts, who have opined that chrysotile cannot cause mesothelioma in humans except at “extremely high” levels of exposure and that the asbestos exposures one sees from gasket and packing work cannot normally cause or contribute to causing mesothelioma. They are also relevant to rebut Garlock’s assertions through other witnesses (such as the lawyers who defended it and the in-house lawyer who supervised the defense of claims) to say that there is no valid scientific evidence on the Claimants’ side of the asbestos litigation. In short, if the Court entertains the opinions of Garlock’s medical/science experts, the opinions of the Committee’s experts are necessarily relevant and admissible and fit the issues the Court has before it.⁹⁰

⁹⁰ The Committee believes that the entire “medical-science” case the Court saw for eight full days of trial testimony is not necessary for the Court to estimate Garlock’s financial liability for mesothelioma claims.

D. The Opinions and Testimony of the Committee's Medical Experts Are Reliable.

The Committee's medical expert opinions are based on peer-reviewed scientific articles, shared by others in the scientific community, are consistent with recognized scientific laws and procedures and thus are necessarily more than sufficiently reliable to satisfy the *Daubert* standard. As outlined earlier in this Response, the Committee's expert opinions are based on several well-accepted (and unchallenged) tenets. Mesothelioma is a signature asbestos disease that may be caused by an exceedingly low dose of asbestos exposure. Medical experts have so frequently testified that mesothelioma is a low dose, low threshold disease, that there are also numerous court cases in which this opinion is noted with favor.⁹¹

⁹¹ See, e.g., *Larson v. Johns-Manville Sales Corp.*, 399 N.W.2d 1, 4 (Mich. 1987) (mesothelioma can result from "minimal exposure to asbestos"); *Fusaro v. Porter-Hayden Co.*, 548 N.Y.S.2d 856, 859 (N.Y. Sup. Ct. 1989) (mesothelioma can result from a "short exposure" to asbestos); *80 S. Eighth St. Ltd. P'ship v. Carey-Canada, Inc.*, 486 N.W.2d 393, 398 (Minn. 1992) ("It is generally accepted that mesothelioma is not dose related but can be caused by a single exposure to asbestos."); *Sheffield v. Owens-Corning Fiberglass Corp.*, 595 So. 2d 443, 456 (Ala. 1992) ("Exposure to asbestos for as little as one day can significantly contribute to, cause, and/or aggravate asbestos-related lung diseases. The injurious effect of ingesting asbestos fibers into the lungs is cumulative."); *Tragarz v. Keene Corp.*, 980 F.2d 411, 420 (7th Cir. 1992) (mesothelioma can develop after "only minor exposures to asbestos fibers"); *Harashe v. Flintkote Co.*, 848 S.W.2d 506, 508 (Mo. Ct. App. 1993) (court noted that even defense expert conceded that mesothelioma could result from a "single heavy exposure" to asbestos); *Held v. Avondale Indus., Inc.*, 672 So. 2d 1106, 1109 (La. Ct. App. 1996) (holding medical evidence showed "no known level of asbestos [exposure] which would be considered safe" and finding "any [asbestos] exposure, even slight exposures, to asbestos . . . to be a significant contributing cause of the [decedent's] malignant pleural mesothelioma"); see also *Reserve Mining Co. v. EPA*, 514 F.2d 492, 508 n.25 (8th Cir. 1975) ("It is significant that the witnesses generally agree that no known safe level of exposure exists for mesothelioma."); *Celotex Corp. v. Tate*, 797 S.W.2d 197, 203 (Tex. Ct. App. 1990) ("The medical evidence confirmed that inhaling asbestos dust in industrial conditions, even with relatively light exposure, can produce mesothelioma."); *McAskill v. Am. Marine Holding Co.*, 9 So. 3d 264, 268 (La. Ct. App. 2009) (holding that "brief exposures to asbestos have caused mesothelioma" and "every non-trivial exposure to asbestos contributes to and constitutes a cause of mesothelioma"); *Georgia Pacific Corp. v. Pransky*, 800 A.2d 722, 725 (Md. 2002) (holding that there was sufficient evidence establishing causation to uphold a jury verdict in a mesothelioma case where the plaintiff's only asbestos exposure occurred as a child when she was in the room when her father was sanding Georgia-Pacific Joint Compound); *Blancha v. Keene Corp.*, Civil Action No. 87-6443, 1991 U.S. Dist. LEXIS 15394, at *7, *15-16 (E.D. Pa. Oct. 24, 1991) ("Very small amounts of and short periods of exposure to asbestos dust and fibers can cause mesothelioma. . . . Mesothelioma . . . may be caused by a very small amount of exposure both as to time period and concentration. . . . Thus, it is not essential to establish with any precision the quantity, duration, or percentage of the occupational exposure to asbestos for which any or

Also supportive of the Committee's expert opinions are the numerous published medical articles mentioned in the earlier sections of this brief. All of these articles demonstrate the complex and variety of ways each asbestos exposure contributes to the development of mesothelioma. To summarize, repeated exposure to asbestos fibers overrides the body's defense mechanism and creates chronic inflammation which facilitates development of cell damage and ultimately mesothelioma. These articles and declarations satisfy *Daubert* because they demonstrate the reliability of the science underlying the Committee's expert opinions, many of which have been subject to peer review, and that their opinions are consistent with scientific laws and procedures. Accordingly, Garlock's arguments that the Committee's opinions and testimony are not relevant or reliable under *Daubert* are unavailing. As the articles, cases and affidavits referenced herein show, the opinions at issue meet the standards required for admission.

III. GARLOCK'S VARIOUS ARGUMENTS REGARDING THE ALLEGED UNRELIABILITY OF THE COMMITTEE'S MEDICAL EXPERT OPINIONS ARE WITHOUT MERIT

A. Specific Causation Is Not at Issue in this Proceeding as No Expert Is Being Offered to Prove Specific Causation for any Individual Claimant.

Garlock argues that the Committee's Medical/Science experts should not be permitted to testify because a) none of them rendered specific causation opinions as to any particular

each particular manufacturer or supplier is responsible in order to establish proximate cause and, therefore, liability."); *Eagle-Picher Indus., Inc. v. Balbos*, 578 A.2d 228, 243 (Md. Ct. Spec. App. 1990), *aff'd in part and rev'd in part on other grounds*, 604 A.2d 445 (Md. 1992) (finding that "all of Knuckles's exposures to asbestos were 'significant contributing causal factor[s] to the mesothelioma.'" (alteration in original); *Rutherford v. Owens-Illinois, Inc.*, 941 P.2d 1203, 1207 (1997) (a plaintiff "is free to further establish that his particular asbestos disease is cumulative in nature, with many separate exposures each having constituted a 'substantial factor' that contributed to his risk of injury.") (internal citation omitted); *see also Mavroudis v. Pittsburgh-Corning Corp.*, 935 P.2d 684 (Wash. Ct. App. 1997) (expert stating any exposure to asbestos products discussed contributes to development of mesothelioma); *In re Patenaude*, 210 F.3d 135, 138 (3d Cir. 2000) (discussing "invariably fatal cancer mesothelioma, for which asbestos exposure is the only known cause"); *Spaur v. Owens-Corning Fiberglas Corp.*, 510 N.W.2d 854, 861 (Iowa 1994) ("[I]t is not necessary and indeed may be impossible to establish exactly how much one party's asbestos product contributed to the resulting injury. From the medical evidence presented, the jury could infer that [the Bondex product] was a contributing cause of [plaintiff's] disease.").

mesothelioma plaintiff or group of plaintiffs (i.e., whether or not exposure to Garlock asbestos was a substantial factor in causing the plaintiff's mesothelioma), and b) none of them reviewed the Personal Injury Questionnaires (PIQ). Although Garlock's Motion admonishes the Committee's experts for failing to offer specific causation opinions as to particular Claimants, Garlock conceded at trial that, "We're not asking the court to decide the merits of any individual claim, or decide any scientific issues here. We ask only that the court estimate our legal liability."⁹² Thus, Garlock's Motion about the relevance and "fit" of the Committee's medical and scientific experts' testimony ignores both the issues to be decided in this proceeding and the testimony the Committee has offered from Dr. Welch, Dr. Brody and Dr. Brodtkin as a response to the medical and scientific opinions that Garlock is attempting to bring into the case. As previously noted, this is a proceeding to estimate Garlock's aggregate liability for pending and future mesothelioma claims, not to decide the merits of any particular case or group of cases.

For these reasons, the Committee believes that the scientific and medical issues discussed in this motion, and debated between the Committee's medical experts on the one hand and Garlock's experts on the other are simply irrelevant to the task the Court must undertake in estimating the value of present and future mesothelioma claims against Garlock. However, to give the Court an idea of kind of testimony that mesothelioma victims routinely present in asbestos cases, the Committee presented such medical and science testimony from several witnesses who have published numerous articles in the peer reviewed literature about issues relating to asbestos.

Thus, contrary to Garlock's contention that "[s]pecific causation is the key issue in assessing liability for Estimation in this case[]", this proceeding is not meant to try or determine

⁹² Garlock Opening Statements 18:25 – 19:2.

the merits of individual mesothelioma cases in any sense.⁹³ The Committee's experts are not being offered to prove specific causation in any case, or in groups of cases, because that issue is simply not before this Court. The scheduling orders governing the Estimation Hearing have made it quite clear from the outset that individual plaintiffs are not parties to the Estimation Hearing, and that no individual plaintiff was required to provide expert witness reports and expert testimony necessary to prove the merits of his or her case against the Debtors.

B. The Committee's Medical Expert Opinions Are Not based upon the "Each and Every" Exposure Theory of Causation.

Garlock is misguided to the extent it claims that the Committee's experts' opinions are based upon the so-called "each and every exposure" theory of causation. In fact, Garlock blurs together two separate and distinct concepts – general causation and specific causation (which is not at issue in this case) – by insisting that the Committee's experts' base their specific causation opinions on the proposition that "each and every" asbestos exposure contributes to cause asbestos-related disease. They do not.

The Committee's medical experts have testified time and again that as matter of general causation, asbestos diseases are caused by cumulative asbestos exposure. The Committee's medical and scientific experts established that cumulative exposures to asbestos above the background level in the ambient air increase the total exposure, and that cumulative exposure increases the risk of developing mesothelioma. Coupled with the fact that each exposure shortens the average latency period for the appearance of mesothelioma, all significant exposures substantially contribute to the causation of mesothelioma. Contrary to Garlock's argument, each

⁹³ Generally, a plaintiff alleging that a toxic agent caused injury must prove both general and specific causation. *See In re Hanford Nuclear Reservation Litig.*, 292 F.3d 1124, 1133-34 (9th Cir. 2002). General causation concerns whether a toxic agent has the capacity to cause the disease. *Id.* at 1133. Specific causation concerns whether the toxic agent in question caused an injury in a particular individual. *Id.*

of the Committee's medical experts have agreed that *de minimus*, transient or trivial exposures to asbestos are insufficient to prove to a reasonable degree of medical or scientific certainty that the exposure was a substantial factor in causing mesothelioma.⁹⁴

Ignoring this evidence, Garlock engages in argument *reductio ad absurdum*⁹⁵ by contending the Committee's experts' opinions that each and every significant exposure to asbestos contributes to the cumulative dose that causes the disease necessarily means that the experts endorse the proposition that the addition of a single fiber to the ambient air level is sufficient to constitute a substantial contributing factor. *See* Garlock Br. 22. While Garlock claims this is the opinion of the Committee's experts, it fails to point toward any portion of any of the experts' reports or deposition testimony wherein this type of opinion was specifically stated. Indeed, as previously discussed, specific causation pertaining to some theoretical, short-term exposure of "one breath" or "one fiber" or "one exposure" is not at issue here, nor have the Committee's experts provided any opinions in this regard.

Indeed, Garlock mischaracterizes the actual opinions of the Committee's experts by selectively quoting snippets of testimony out of context, a practice that Maryland's highest court recently condemned when it reinstated a mesothelioma verdict against Ford supported by Dr. Welch's testimony on July 25, 2013 in *Dixon v. Ford Motor Co.*, 70 A.3d 328 (Md. 2013). In *Dixon*, the issue before the Court was whether the Court of Special Appeals was correct in concluding that the trial court erred in admitting the testimony of Dr. Welch that "every exposure to asbestos, including the short-fiber chrysotile asbestos contained in Ford brake products, increased the likelihood of contracting mesothelioma and thus constituted a substantial

⁹⁴ *See, e.g.*, Brodtkin Tr.

⁹⁵ Debtors cite to comments regarding an assertion that a single fiber among millions is substantially causative – an opinion not held by any of the Committee's medical and scientific experts. *See* Debtor's Br. 22-27.

contributing cause of that disease.” 70 A.3d at 331. In this determination, the Court noted that the defendant’s major “fallacy” in its argument to exclude Dr. Welch’s so-called “every exposure” opinion under *Frye*, was that Ford “**largely ignores the other parts of her testimony that provide a context to that one statement.**” *Id.* at 335 (emphasis added). That chrysotile asbestos can cause mesothelioma “is not a novel scientific principle.” *Id.* (citing *Eagle-Picher Indus., Inc. v. Balbos*, 604 A.2d 445, 452 n.7 (Md. 1992)). The Court of Appeals accepted the fact that the general consensus among the scientific community was that exposure to asbestos, including chrysotile asbestos, can cause mesothelioma. *Id.* Moreover, the *Dixon* court noted that Dr. Welch’s opinion was based on reliable scientific methodology, including various epidemiological studies, case studies, and regulatory opinions concluding that all forms of asbestos, including chrysotile, can cause mesothelioma. *Id.* at 333-34. Accordingly, the Court of Appeals held that the trial court did not err in admitting Dr. Welch’s opinion, which was supported by “substantial evidence,” and thus remanded the case to the trial court with instruction to reinstate the jury verdict in favor of the plaintiff. *Id.* at 337, 347.

C. **It Is No Defense That Garlock’s Victims Were Also Exposed to Asbestos from Other Manufacturers’ Products; an Individual’s Cumulative Exposure to Asbestos – Including Chrysotile – Can Cause or Contribute to Causing Mesothelioma.**

Garlock next argues that the Committee’s opinions should be excluded based on their alleged failure to consider other asbestos exposures, including exposure to amphibole asbestos. Garlock contends that any workers who developed asbestos-related illnesses did not fall ill because of exposure to Garlock’s products, but because of other manufacturers’ products, such as asbestos insulation on pipes. *See* Garlock Br. 16-18. This defense has no scientific basis, and has consistently been rejected by courts in the tort system. From a scientific and biological point of view, every exposure to asbestos above background levels experienced by an individual with

an asbestos-related disease contributes to the risk of development of the disease. Even Garlock concedes that “[c]ausation is investigated based on cumulative lifetime exposure.” Garlock Br. 21.

As the Fifth Circuit explained, “[i]t is impossible, as a practical matter, to determine with absolute certainty which particular exposure to asbestos dust resulted in injury” to the plaintiff. *Zimko v. Am. Cyanamid*, 905 So. 2d 465, 484 (La. Ct. App. 2005) (citing *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076 (5th Cir. 1973)). “[E]xposure to asbestos dust is cumulative, that is, each exposure may result in an additional and separate injury.” *Id.* Thus, as the Maryland Court of Appeals has explained: “In products liability cases involving asbestos, where the plaintiff has sufficiently demonstrated both lung disease resulting from exposure to asbestos and that the exposure was to the asbestos products of many different, but identified, suppliers, no supplier enjoys a causation defense solely on the ground that the plaintiff would probably have suffered the same disease from inhaling fibers originating from the products of other suppliers.” *Eagle-Picher Indus.*, 604 A.2d at 459; *see also Spaur*, 510 N.W.2d at 861 (“[I]t is not necessary and indeed may be impossible to establish exactly how much one party’s asbestos product contributed to the resulting injury. From the medical evidence presented, the jury could infer that [the defendant’s product] was a contributing cause of [plaintiff’s] disease.”).

The Fourth Circuit has emphasized that the substantial contributing factor test must be interpreted and applied practically in toxic tort cases, including asbestos personal injury cases, in view of the scientific and medical reality that it is impossible to prove what precise level of exposure the plaintiff experienced, what precise level of exposure will cause injury, and which specific product (or specific asbestos fibers) caused the illness. For example, in *Westberry v. Gislaved Gummi AB*, 178 F.3d 257 (4th Cir. 1999), a toxic tort case, the Fourth Circuit rejected

the defendant's argument that the plaintiff's expert's testimony should not be admitted because the expert could not prove "the levels of exposure that are hazardous to human beings generally as well as the plaintiff's actual level of exposure." *Westberry*, 178 F.3d at 263 (citation and internal quotation marks omitted). The court noted that:

[O]nly rarely are humans exposed to chemicals in a manner that permits a quantitative determination of adverse outcomes. . . . Human exposure occurs most frequently in occupational settings where workers are exposed to industrial chemicals like lead or asbestos; however, even under these circumstances, it is usually difficult, if not impossible, to quantify the amount of exposure.

Id. at 264 (quoting Federal Judicial Center, *Reference Manual on Scientific Evidence* at 187 (1994)) (second alteration in original). The court further explained that "precise information concerning the exposure necessary to cause specific harm to humans and exact details pertaining to the plaintiff's exposure . . . is not always available, or necessary, to demonstrate that a substance is toxic to humans given substantial exposure and need not invariably provide the basis for an expert's opinion on causation." *Id.* (citing *Heller v. Shaw Indus., Inc.*, 167 F.3d 146, 157 (3d Cir. 1999) (noting "that even absent hard evidence of the level of exposure to the chemical in question, a medical expert could offer an opinion that the chemical caused plaintiff's illness"))).

In any event, Garlock consistently fails to acknowledge that mesothelioma is an indivisible injury caused by a person's cumulative exposure to asbestos over time. Epidemiology has also shown that a person's risk of contracting mesothelioma becomes greater as exposure to asbestos increases and that the more exposure a person has the shorter the latency period between the first exposure to asbestos and manifestation of mesothelioma.⁹⁶ Accordingly,

⁹⁶ 2001 Bianchi Paper, *supra* note 46, at 166 ("In general, there was an inverse relationship between intensity of exposure and duration of the latency period."); Neumann, *supra* note 46, at 388 ("There was a trend towards shorter latency periods in the presence of higher asbestos burdens.").

cumulative dose best explains the increased risk of mesothelioma in the population.⁹⁷ Multiple epidemiological studies designed to determine the lowest quantum of exposure to asbestos capable of causing mesothelioma have established that an individual's risk of contracting mesothelioma can be greatly increased by a level of asbestos exposure that can be reached in just a few days of working with asbestos or asbestos containing products.⁹⁸

Therefore, even if plaintiffs were exposed to multiple sources of asbestos, Garlock cannot ignore their exposures to Garlock's products. In *In re Asbestos Products Liability Litigation* (No. VI), MDL Dkt. No. 875, 2010 U.S. Dist. LEXIS 123090 (E.D. Pa. Nov. 15, 2010),⁹⁹ Judge Robreno held that Dr. Legier's methodology was reliable even though Dr. Legier allegedly failed "to consider an idiopathic origin" of a plaintiff's asbestos disease. *Id.* at *14. Quoting the decision in *Heller*, Judge Robreno reasoned that "an expert's opinion should not be excluded because 'he or she has failed to rule out every possible alternative cause of a plaintiff's illness.' Rather, '[s]uggested alternative causes' of the injury 'affect the weight that the jury should give the expert's testimony and not the admissibility of that testimony.'" *Id.* (quoting *Heller*, 167 F.3d at 155, 156, 157).

Indeed, Dr. Welch testified regarding multiple exposures to asbestos, opining that if an individual is exposed to both chrysotile containing products and products containing amphiboles, it is not medically appropriate to exclude the chrysotile exposures as contributing to cause the mesothelioma.¹⁰⁰ It was not *just* the amphibole exposure or *just* the chrysotile exposures that

⁹⁷ 2 Dail & Hammar, *supra* note 47, at 587 ("[W]hen there are multiple asbestos exposures, each contributes to cumulative exposure and hence to the risk and causation of MM [malignant mesothelioma]."); Bignon at al., *supra* note 47, at 36.

⁹⁸ Iwatsubo, *supra* note 38; **2001 Rödelsperger Paper**, *supra* note 38.

⁹⁹ In reference to *Larson v. Bondex International*, Case No. 09-69123 (copy attached as Ex. 53).

¹⁰⁰ Welch Tr. 2131:25 – 2140:25, 2148-2152.

caused the disease, but the total exposure that caused the injury in any particular person. Garlock's suggestion that alternative sources of asbestos exposure are responsible for Claimants' asbestos-related diseases is not only speculative but irrelevant in the context of their exposures to Garlock's asbestos-containing packing and gasket products.

D. Garlock's Various Attacks on the Reliability of the Committee's Opinions Is Overbroad and Fails To Consider the Hundreds of other Relevant Articles on which the Committee's Experts Rely.

Garlock next attempts to convince this Court that the various scientific and medical articles on which the Committee's experts base their opinions regarding the ability of chrysotile asbestos from Gaskets to cause disease have been rejected by case law.¹⁰¹ More specifically, Garlock attacks the Committee's experts' use of case reports, animal studies and Public Health Agency Statements, claiming that only epidemiology studies are reliable. Importantly, the scientific arguments pertaining to chrysotile and its ability to cause asbestos-related disease is irrelevant to this Court's task in estimating Garlock's liability for pending and future mesothelioma claims. As previously noted, Garlock itself acknowledged at trial: "We're not, asking the court to . . . determine whether chrysotile is a cause of mesothelioma [or to] decide any scientific issues."¹⁰²

Notwithstanding the fact that the issue of whether chrysotile can cause disease is not before this Court, Garlock's entire argument as it relates to the basis of the Committee's experts' opinions ignores completely the myriad other medical and scientific articles on which Drs. Welch, Brody and Brodtkin rely. As recounted at length in the Background section, there are dozens of articles concerning asbestos exposure and the development of mesothelioma and other asbestos-related disease that (1) are peer-reviewed and published in the literature and (2) support

¹⁰¹ See Garlock Br. 28-43, 55-59.

¹⁰² Garlock Opening Statements 18:25 – 19:2, 27:21-22.

the general causation opinions of Drs. Welch, Brody and Brodtkin. Garlock, however, fails to mention that the Committee's experts have also relied on "relevant scientific studies" many of which are listed in their reliance materials and also fails to mention the dozens of articles cited in the Committee's Expert reports.¹⁰³

Ultimately, the fact that the Committee's experts relied, in part, upon case reports, animal studies and/or statements made by governmental agencies is fodder for cross examination and goes to the weight of the testimony, not its admissibility. *Hose v. Chi. Nw Transp. Co.*, 70 F.3d 968, 974 (8th Cir. 1995) ("As a general rule, the factual basis of an expert opinion goes to the credibility of the testimony, not the admissibility, and it is up to the opposing party to examine the factual basis for the opinion in cross-examination.") (quoting *Loudermill v. Dow Chem. Co.*, 863 F.2d 566, 570 (8th Cir. 1988)); *see also Viterbo v. Dow Chem. Co.*, 826 F.2d 420, 422 (5th Cir. 1987) ("As a general rule, questions relating to the bases and sources of an expert's opinion affect the weight to be assigned that opinion rather than its admissibility and should be left for the jury's consideration." (citing *Dixon v. Int'l Harvester Co.*, 754 F.2d 573, 580 (5th Cir. 1985))).

1. Epidemiology Studies Are Not Necessary To Prove Causation under *Daubert*, and in Any Event, the Committee's Experts Rely on Various Peer-Reviewed Epidemiology Studies.

Garlock argues that epidemiology studies are necessary to prove causation. Garlock is mistaken. The Fourth Circuit has held repeatedly that "[u]nder the *Daubert* standard, epidemiological studies are not necessarily required to prove causation, as long as the methodology employed by the expert in reaching his or her conclusion is sound." *Benedi v. McNeil-P.P.C., Inc.*, 66 F.3d 1378, 1384 (4th Cir. 1995). The Fourth Circuit has even addressed

¹⁰³ See Expert Report of Dr. Welch (ACC Ex. 3002), Expert Report of Dr. Brody (ACC 3563), and Expert Report of Dr. Brodtkin (ACC 3333).

this issue in the context of an asbestos case when it “recognized that expert testimony need not be based upon identical case studies or epidemiological data.” *Id.* (citing *City of Greenville v. W.R. Grace & Co.*, 827 F.2d 975 (4th Cir. 1987)). Ultimately, the court held:

[T]he plaintiff’s expert’s testimony could reasonably support the jury’s finding for the City and that **the defendant should not be allowed “to escape liability simply because no occupant of the city hall has yet developed an asbestos-related disease, or because there are, as yet, no epidemiological studies concerning health risks associated with asbestos contamination of office buildings.”**

Id. (quoting *City of Greenville*, 827 F.2d at 980 n.2) (emphasis added); *see also Heller*, 167 F.3d at 149 (finding District Court abused its discretion by excluding expert testimony that was based on a reliable methodology simply because “no epidemiological or animal studies linked defendant’s product to plaintiff’s disease”) (internal quotation marks omitted); *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717 (3d Cir. 1994) (approving causation opinion based on differential diagnosis); *Wells v. Ortho Pharm. Corp.*, 788 F.2d 741, 744-45 (11th Cir. 1986). In short, where the proponent offers sufficient evidence relating to relevance and reliability, it is “the jury’s role to assess the weight and credibility of the evidence.” *Benedi*, 66 F.3d at 1385.

Previously, Judge Robreno addressed certain defendants’ challenges of the reliability of Dr. Arnold Brody’s testimony concerning asbestos based on Dr. Brody’s failure to “evaluate the relevant epidemiological literature before reaching his opinions.” *In re Asbestos Prods. Liab. Litig. (VI)*, 2010 U.S. Dist. LEXIS 123090, at *8.¹⁰⁴ Judge Robreno noted that, while “Dr. Brody may not have relied on epidemiological studies, . . . his expert opinion is not without a reliable basis.” *Id.* at *10. Ultimately, Judge Robreno declined to overrule the decision of Judge Angell that Dr. Brody’s methods were reliable. *Id.* at *11.

¹⁰⁴ See *supra* note 99.

As the Supreme Court made clear in *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999), the ultimate objective of *Daubert*'s gate-keeping requirement is not to ensure that every causation opinion expressed by an expert is backed by an epidemiological study, but rather "to make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Kumho Tire*, 526 U.S. at 152.

To the extent that Garlock argues that an epidemiologic study specific to the trade or job of the plaintiff is required to establish causation, courts that have addressed this issue in the context of asbestos induced injuries have held that such a showing is not required. See *Landrigan v. Celotex Corp.*, 605 A.2d 1079, 1087 (N.J. 1992) (relative risk in excess of 2.0 is not required to prove specific causation of colon cancer in individual); *Berger v. Amchem Prods.*, 818 N.Y.S.2d 754, 759-52 (N.Y. Sup. Ct. 2006) (where epidemiological evidence has shown that asbestos causes mesothelioma and other diseases, it is not necessary to have an epidemiological study for every occupation). Thus, despite Garlock's assertions, it is not necessary to have an epidemiologic study of a specific type of asbestos exposure or a specific type of worker cohort to be able to reliably conclude that an individual's exposure to asbestos is the cause of his or her mesothelioma. The Committee's experts have come forward with dozens of studies, medical articles, animal studies and other literature which support the opinions of their experts. This evidence is sufficient to satisfy the requirements of Rules 104, 702 and *Daubert*.

Notwithstanding the fact that epidemiology is not required to establish causation under *Daubert* and the Fourth Circuit jurisprudence, the Committee's experts have discussed numerous case-control epidemiology studies documenting much more than a doubling of the risk of

mesothelioma at exposures to unspecified fiber types as low as 0.07 fiber years.¹⁰⁵ As Dr. Welch and her co-authors explain, these studies are relevant to chrysotile exposures.¹⁰⁶ Indeed, Dr. Welch, in particular, has been the designer and author of two of the largest epidemiology studies of asbestos exposed workers ever conducted, has had her papers cited by the most recent IARC Monograph on Asbestos, and has spent most of her career doing research into the cause of asbestos related disease. Dr. Welch and Dr. Brodtkin each testified there have been over a dozen epidemiology studies conducted all over the world showing an increased risk of mesothelioma in cohorts of people exposed to chrysotile asbestos,¹⁰⁷ that there are both case series and analytical epidemiology studies supporting their view that a few days of chrysotile exposure by itself causes mesothelioma in humans, that exposure to asbestos fibers from gaskets can cause mesothelioma, and that in a mixed exposure setting there is no scientifically valid way to exclude chrysotile exposure from contributing to the causation.

¹⁰⁵ A “case-control study” compares two groups of people: those with the disease or condition under study (cases) and a similar group of people who do not have the disease or condition (controls). Researchers study the medical and lifestyle histories of the people in each group to learn what factors may be associated with the disease or condition. For example, one group may have been exposed to a particular substance, such as asbestos, that the other was not.

¹⁰⁶ See generally 2007 Welch Paper, *supra* note 50.

¹⁰⁷ Garlock’s experts take the position that any chrysotile study where there is even a tiny amount or potential for amphibole exposure negates the study. This is contrary the views of the world scientific community, which treats studies where there is overwhelming chrysotile as compared to tremolite as chrysotile exposure studies. See 2012 McCormack Paper, *supra* note 60; 2013 McCormack Paper, *supra* note 60. Studies from Quebec, Italy, China and elsewhere have repeatedly demonstrated the ability of chrysotile to cause mesothelioma. Regarding fiber potency specifically, Dr. Welch explained how more recent updates to the mesotheliomas arising in chrysotile exposed cohorts would substantially increase the potency of chrysotile as compared to the amphiboles and that in 2008, a Science Advisory Board convened by the Environmental Protection Agency to quantify the differences in fiber types concluded that the historical data was not sufficient to conclude that chrysotile asbestos was substantially less potent than amphibole asbestos.

2. Case Reports Are Routinely Relied on by Experts when Assessing Mesothelioma Causation.

Garlock next argues that reliance on case reports is a “red flag that an expert’s opinions are unreliable.” Garlock Br. 28. As previously discussed, the Committee’s expert opinions are only partially based on case reports, in addition to Garlock’s own discovery responses confirming asbestos content of its products and a well-documented and generally-accepted causal relationship between asbestos exposure, including chrysotile exposure, and mesothelioma. In that sense, whether or not the studies are case reports or epidemiological studies is a red-herring that distracts from the evidence in the record.

Indeed, as the trial testimony of Drs. Welch and Brodtkin taken its entirety have made clear, they certainly do not rely only on case reports or case series in reaching their causation opinions. Case reports are just one type of evidence they rely on, which includes analytical epidemiology studies as well. As Dr. Victor Roggli, an expert who mostly testifies for asbestos defendants (and who is Dr. Sporn’s mentor), has testified, case series are an important part of the information a doctor relies upon to assess the ability of asbestos to cause mesothelioma:

Q. Would you agree with me that this study of ten cases is a case series?

A. Yes.

Q. And you rely on that case series to inform your views about causation of mesothelioma, right?

A. It’s part of the information that I rely upon in that regard, yes, sir.

Q. And so if, in your opinion, case series can be an important part of information that doctors rely upon to make causation determination, not all of it but it can be an important piece, right?

- A. I think it depends on the circumstances, but yes, I think I would certainly give consideration to such studies depending upon what other information is available or depending upon the weight.¹⁰⁸

Dr. Sporn agreed with Dr. Roggli about the usefulness of case series in assessing mesothelioma causation.¹⁰⁹ And, as Dr. Sporn admitted on cross-examination,¹¹⁰ Dr. Roggli also has stated in an affidavit that “exposure to dust from Garlock gaskets was a substantial contributing cause in the development of [the plaintiff’s] mesothelioma.”¹¹¹

Moreover, despite Garlock’s attempt to paint the prohibition of case reports as the majority rule across the federal courts, the Committee can point to numerous cases in which courts have found case reports to be reliable and admissible. The federal judge overseeing the entire federal asbestos docket was faced with the defendant’s motion which sought to preclude Dr. Maddox from relying on case reports or case series, including the Australian Mesothelioma Registry report in forming his causation opinions in that case. Following a “mini-*Daubert*” hearing during the middle of trial, Judge Robreno concluded that case reports were permissible under Federal Rules of Evidence 702 and 703.¹¹² *See, e.g., Globetti v. Sandoz Pharms., Corp.*, 111 F. Supp. 2d 1174, 1178 (N.D. Ala. 2000) (finding that expert opinions based in part on case reports were reliable and admissible); *Pick v. Am. Med. Sys., Inc.*, 958 F. Supp. 1151 (E.D. La. 1997) (finding that case studies involving silicone gel implants were sufficiently reliable to be admissible); *Tyler v. Sterling Drug, Inc.*, 19 F. Supp. 2d 1239, 1241 (N.D. Okla. 1998).

¹⁰⁸ See Roggli Dep. at 47:9-23, *Boomer v. Abex Corp.*, No. CL05-010647-00 (Albemarle Cnty. Cir. Ct. June 30, 2011) (copy attached as Ex. 54).

¹⁰⁹ Sporn Tr. 453-454.

¹¹⁰ *Id.* at 491-92.

¹¹¹ Roggli Aff. at 3 (May 29, 2001) (copy attached as Ex. 55).

¹¹² Tr. of Jury Trial 59-61, *Schumacher v. Amtico*, Case No. 10-1627 (E.D. Pa. Nov. 4, 2010) (relevant portions attached hereto as Ex. 56); *see also* Order, *supra* note 5.

In making its argument that case studies are unreliable, Garlock fails to consider that in an asbestos case, case reports are only part of the evidence establishing causation. The Committee's opinions are not based only on case reports, but a variety of medical and scientific literature demonstrating the casual relationship between chrysotile asbestos exposure and the development of mesothelioma.

3. Animal Studies Can Be Considered As Well.

Garlock also asserts that "animal studies are inadmissible to prove causation absent confirmatory epidemiology." Garlock Br. 55. Contrary to Garlock's contention, there is no per se rule that animal studies cannot ever be a proper foundation for an expert's opinion. *See General Elec. Co. v. Joiner*, 522 U.S. 136, 144 (1997). Under *Daubert*, a court must focus on whether an expert's opinion of causation as to injury is sufficiently supported by the animal studies on which an expert purports to rely. *Id.* Moreover, the Tenth Circuit has adopted the holding that animal studies are probative as to causation issues holding "[t]he generally accepted view in the scientific community is that [the expert's] methodology [case reports, spontaneous reports of adverse medical events collected by the FDA, and **animal studies**] can be used to generate hypotheses about causation. . . ." *Hollander v. Sandoz Pharms. Corp.*, 95 Supp. 2d 1230, 1230 (W.D. Okla. 2000) (quoting *Haggerty v. Upjohn Co.*, 950 F. Supp. 1160, 1164 (S.D. Fla. 1996)) (emphasis added) (alterations in original). Thus, a judge may consider an animal study as one of several factors that an expert may rely on under *Daubert*.

4. The Committee's Experts Rely on Numerous Publications in the Medical and Scientific Literature in Addition to the Statements of Governmental Agencies.

Garlock attacks the Committee's experts for their reliance on analyses and statements promulgated by entities such as IARC, the National Academy of Sciences, and WHO as support for their opinions about asbestos and disease. As an initial matter, an expert's partial reliance on

governmental statements, such as those made by OSHA, is entirely appropriate and certainly does not warrant wholesale exclusion of expert opinions. In *Hollander v. Sandoz Pharmaceuticals Corp.*, 289 F.3d 1193 (10th Cir. 2002), the court noted that there is no general rule holding that regulatory decisions “lack the intellectual rigor necessary under the *Daubert* reliability inquiry.” *Hollander*, 289 F.3d at 1215. On the contrary, the court admitted that some authorities “view the review process in the regulatory area as typically ‘far more careful and systematic’ than the peer review process.” *Id.* Moreover, “Regulators require that documents submitted to them contain far more detail than is typically found in papers submitted to professional journals . . . and administrative reports-not peer reviewed journals – may provide parties with the solidest available data.” *Id.*

Indeed, in this case, one of Garlock’s experts, Mr. Henshaw, agreed that the National Academy of Sciences peer review process was “one of the highest levels of intellectual scrutiny something can survive.”¹¹³ The National Academy of Sciences (“NAS”) of course has concluded that chrysotile asbestos causes mesothelioma and that exposure levels as low as .0004 f/cc can cause mesothelioma.¹¹⁴

Other courts had noted with approval that an expert may consider, among other sources of information, whether governmental agencies considered that a substance may cause a particular type of injury. *See, e.g., Milward v. Acuity Specialty Prods. Group*, 639 F.3d 11, 19 (1st Cir. 2011) (expert properly considered opinions of “governmental agencies, experts, and active researchers in the field that benzene can cause AML as a class”); *see also Lofton v. McNeil Consumer & Specialty Pharms.*, No. 3:05-CV-1531-L (BH), 2008 U.S. Dist. LEXIS

¹¹³ Henshaw Tr. 938-39.

¹¹⁴ *See generally* ACC Exhibit 4323 at pages 209-12 (1984 NAS Asbestos – Non Occupational Health risks); Henshaw Tr. 939.

94391, at *16 (N.D. Tex. July 25, 2008) (distinguishing *Allen* because experts relied only in part on FDA statement in addition to published epidemiological studies and case reports).¹¹⁵

More to the point, Garlock's attacks mischaracterize how the Committee's experts used and reviewed the "Public Health Agency Statements." The Committee's experts did not just blindly rely on what all of these scientific agencies have concluded about chrysotile asbestos and its ability to cause mesothelioma at all levels of exposure. As Dr. Welch explained, she regularly reviews the asbestos medical literature, has read all of the human asbestos exposure epidemiology studies, but she relies on consensus statements such as the IARC monograph as confirmation for her own independent conclusions because they have put together a large group of experts in the field to review the literature from many different points of view:

Q. Okay. And why is it that you as a medical doctor consider the views of something like the international agency for research on cancer or the United States surgeon general or the national toxicology program in form informing your views about whether Chrysotile causes Mesothelioma?

A. Well, let's say let's take IARC. They put together a panel of people who know more than anybody in the world about carcinogens and then they focus on the particular ones that their carcinogens they're interested in. In this case it was asbestos and they spend a long time reviewing all the literature and synthesizing it. So it's, you know, for someone like me, I couldn't do that all on my own.

I don't think any one person on that committee could do that all on their own. It's so much work to synthesize all that information. And that's why we have an organization like IARC is to – their job – they're part of the World Health organization they're not a regulatory agency. Their job is to tell the rest of us what are known human carcinogens so that the rest of us can try to keep people from being exposed to those things.

Q. And IARC's monograph most recent monograph on asbestos was published in 2012. And you looked at not just a scientific agency pronouncement but you've also looked at the underlying studies many of them that they were relying on in making their conclusions as part of your work in this field over the past 25 years?

¹¹⁵ Copy attached as Exhibit 57.

- A. Yes. In particular, the human studies and the epidemiology. They synthesize a tremendous volume of literature and experimental studies and animal studies you know in vitro and in vivo. I would rely on them and other reviews for those. I haven't read those in depth but the human studies yes I think I've read them all.¹¹⁶

Ultimately, the test for reliability and admissibility of a learned treatise is whether an expert in the relevant field (in this case medicine) would rely on the document. Fed. R. Evid. 803(18). Although Dr. Elizabeth Anderson believes that medical doctors should not be permitted to rely on the conclusions of IARC, the World Health Organization or the National Academy of Sciences that chrysotile causes mesothelioma because each of these organizations has some duty to protect human health, she is neither a doctor nor an epidemiologist and should not be able to opine on what a doctor regularly relies upon in assessing causation issues.

5. The Committee's Experts' Opinions Are Reliable and They Have "Good Grounds" To Support Their Conclusions.

Garlock also spends considerable time alleging that the Committee's experts base their opinions on "confounded studies." Garlock Br. 49-54. Garlock references several individual studies, including studies concerning chrysotile cohorts pertaining to the Quebec mines, the Italian mines as well the French and German mesothelioma registry studies. Garlock claims that the Committee's experts' reliance on such studies is improper based on what Garlock alleges is evidence of confounding amphibole asbestos contamination. First, the Committee and its experts to do not concede that any of these studies have confounding factors. In any event, the presence of confounding factors in individual studies is not dispositive of the reliability of the Committee's overall opinions.

As Dr. Welch testified, there are very few epidemiology studies that relate only to "single fiber" asbestos exposures; although chrysotile asbestos made up over 95 percent of the world's

¹¹⁶ Welch Tr. 2111-2113.

use of asbestos the vast majority of asbestos exposed cohorts were exposed to amphibole as well as chrysotile.¹¹⁷ For this reason, the world scientific community treats cohorts where there was “overwhelmingly chrysotile” exposure as a “chrysotile” cohort, and draws conclusions from that data.¹¹⁸ Contrary to Garlock’s assertions, the existence of a miniscule amount of amphibole fiber in a predominantly chrysotile exposure does not render the study “invalid.” As the authors of the recent paper in the British Journal of Cancer which listed the various chrysotile cohorts stated: “At no point do we conclude that ‘mesothelioma occurring in chrysotile-exposed cohorts is due to other asbestos types’; rather we considered it valid to discuss that when multiple carcinogenic fibres are present, the relevant contribution of each is more difficult to disentangle.”¹¹⁹

The grounds supporting the Committee’s experts’ opinions need not be beyond any doubt. As the Third Circuit explained in *Paoli*, “even if the judge believes ‘there are better grounds for some alternative conclusion,’ and that there are some flaws in the scientist’s methods, if there are ‘good grounds’ for the expert’s conclusion, it should be admitted.” *Heller*, 167 F.3d at 152-53 (quoting *Paoli*, 35 F.3d at 744). “The grounds for the expert’s opinion merely have to be good, they do not have to be perfect. The judge might think that there are good grounds for an expert’s conclusion even if the judge thinks that there are better grounds for some alternative conclusion, and even if the judge thinks that a scientist’s methodology has some flaws such that if they had been corrected, the scientist would have reached a different result.” *Paoli*, 35 F.3d at 744. The “good grounds” of the Committee’s experts’ opinions need only be demonstrated by a preponderance of the evidence. *Pritchard v. Dow Agro Scis.*, 705 F. Supp. 2d

¹¹⁷ Welch Tr. 2095:7 – 2096:3; *see also* Sporn Tr. 443:24 – 444:2.

¹¹⁸ Welch Tr. 2113-16.

¹¹⁹ See 2012 McCormack Paper, *supra* note 60; 2013 McCormack Paper, *supra* note 60.

471, 476 (W.D. Pa. 2010) (quoting *Kannankeril v. Terminix Int'l, Inc.*, 128 F.3d 802, 807 (3d Cir. 1997)).

IV. GARLOCK'S ARGUMENTS THAT THE COMMITTEE'S MEDICAL EXPERTS SHOULD BE EXCLUDED ON THE BASIS OF BIAS AND/OR LACK OF CANDOR IS WITHOUT LEGAL OR FACTUAL SUPPORT

Garlock spends nearly fourteen pages of its brief attempting to convince this Court that the Committee's experts are biased and/or untruthful and should therefore be excluded on this basis.¹²⁰ Notwithstanding the fact that Garlock altogether fails to cite any relevant Fourth Circuit case law in support of its argument, and despite acknowledging that "bias is normally merely an issue for cross-examination", Garlock's alleged "bias/candor" arguments are essentially a rehash of other scientific arguments made earlier in its Brief that have been recast as bias. In any event, the factual grounds underlying Garlock's arguments have no merit and should not be given any credibility by this Court as a basis of exclusion.

A. The Committee's Experts Are Not "Quintessential Experts for Hire."

Garlock does not provide any evidence whatsoever that the Committee's experts rise to the level of "quintessential experts for hire" – a ground Garlock claims is basis for exclusion. Indeed, Dr. Welch testified that she dedicates approximately 1.5 days each week volunteering at a free clinic treating individuals who do not have insurance, which is nearly two to three times the amount of time she spends on asbestos-related litigation.¹²¹ As previously discussed, the Committee's experts are substantially more experienced, published and well-qualified to offer their opinions pertaining to asbestos and asbestos-related disease and causation than Garlock's experts.¹²²

¹²⁰ See Garlock Br. 66-82.

¹²¹ Welch Tr. 2101:15-25.

¹²² See discussion *supra* Part I.A.

Not surprisingly, Garlock also ignores the fact that its own experts are what it deems “advocates” for defendants in asbestos litigation. For instance, John Henshaw admitted that at least one of the studies on which he relied to form his opinion that removing gaskets and packing does not result in asbestos exposure to bystanders and workers was *funded by Garlock*.¹²³ Dr. David Weill has never testified in trial or in a deposition on behalf of an individual claiming injury from exposure to asbestos, charges \$600 per hour to testify in this case, and has made approximately \$4.5 million as a result of his testimony in litigation expert since 2002.¹²⁴ Larry Liukonen admitted that he has never testified on behalf of a plaintiff in a trial or deposition and was paid \$400 per hour for testimony in this case.¹²⁵ Similarly, Frederick Boelter testified that he has made approximately \$4-5 million testifying on behalf of asbestos defendants in litigation since 2009 and has not testified on behalf of any plaintiff in asbestos litigation since 1999.¹²⁶ Finally, Dr. David Garabrant testified that in the past seven years (not including this litigation), he has made approximately \$3-4 million in litigation.¹²⁷ In regards to the Garlock litigation specifically, and asbestos litigation generally, Garlock’s medical/science experts have billed far more than the Committee’s medical/science experts.

In any event, it is clear that whatever “bias” the Committee’s medical experts may have was the subject of thorough cross-examination at trial. Garlock’s arguments to the contrary are wholly unconvincing.

¹²³ Henshaw Tr. 883:3-8.

¹²⁴ Weill Tr. at 1014:6 – 1015:12.

¹²⁵ Liukonen Tr. at 562:16-19, 565:5-9 (July 24, 2013).

¹²⁶ Boelter Tr. at 700:2-21, 708:3-7 (July 24, 2013).

¹²⁷ Garabrant Tr. 325:24 – 326:16 (July 23, 2013).

B. The Committee's Experts Have Not Made any Misleading Statements to this Court.

Garlock argues that Dr. Welch's reliance on the 2009 Loomis & Dement study regarding a Marshville textile plant, which Dr. Welch deemed a predominately chrysotile cohort study, is "misleading" based on Garlock's contention that there are documents readily available showing amphibole asbestos at the plant.¹²⁸ Contrary to Garlock's argument, Dr. Welch stated that she wholly disagreed with what Garlock deems credible or determinative evidence that amphibole asbestos products were ever manufactured at the Marshville Plant.¹²⁹ Dr. Welch reiterated the fact that of the 38,000 fiber samples analyzed from the Marshville plant to determine the presence of amphibole asbestos fibers, only *16 fibers* were found which could not definitively be labeled as chrysotile.¹³⁰ Based on this finding, Dr. Welch concluded that Loomis and Dement's study is considered an "overwhelmingly chrysotile exposed cohort."¹³¹

Garlock also claims that Dr. Welch provided "false and misleading testimony in Bondex" based on her representation to the Court that the Balangero mine was a chrysotile mine free of tremolite.¹³² Garlock claims that Dr. Welch "failed to disclose to the Bondex court the existence of the Gunter study . . . which allegedly demonstrates that tremolite constitutes a 10% tailing from the mine." Dr. Welch explicitly refuted this contention on cross-examination during the Garlock trial, noting that the cases in which tremolite were noted did not involve tremolite exposure to *miners*, stating that "I don't think the Balangero miner cohort is affected by Tremolite. So I didn't present this evidence. And if no one asked me that than I didn't answer

¹²⁸ Def. Br. 71.

¹²⁹ Welch Tr. 2171:8 – 2180:16.

¹³⁰ *Id.* at 2118:18 – 2120:20.

¹³¹ *Id.* at 2120:12-20.

¹³² Def. Br. 72.

the question. *But it's not my opinion that the miners have exposure to Tremolite.*"¹³³ Importantly, Dr. Welch further testified that she wholly disagreed with the so-called "Gunter study," which Garlock represents establishes the existence of 10% tremolite trailing. Dr. Welch noted that Dr. Gunter's statement was simply referenced as an aside in a book chapter without any reference or backup data whatsoever to how he arrived at that conclusion.¹³⁴

C. Garlock Has Failed To Demonstrate that the Committee's Experts Did Not Consider Other Relevant and Contrary Studies.

The only other argument Garlock makes with respect to the "bias" inquiry relates to the Committee's experts alleged failure to consider other relevant and "contrary" studies in the literature. In support of Garlock's argument that the Committee's experts are so-called experts for hire or that they "lack candor," Garlock simply cites to opposing studies or views which dispute the medical and scientific evidence in which the Committee's experts have discussed. The Committee's experts need not account for every single study in offering their opinions. Expert opinions simply require "good grounds" not "perfect grounds" to be admissible and any shortcomings related to a lack of consideration of certain studies, assuming there are shortcomings, goes to the weight of the testimony, not its admissibility.

The Committee's experts are not required to rule out every single "contrary" or arguably contrary study in order to have "good grounds" to offer their opinions concerning chrysotile asbestos and mesothelioma. The Committee's expert opinions are supported by extensive literature, researchers in the field and the conclusions of various governmental entities. Any alleged failings are fodder for cross-examination and affect the weight of the expert testimony, not its admissibility. *See Lofton v. McNeil Consumer & Specialty Pharms.*, No. 3:05-CV-1531-L

¹³³ Welch Tr. 2201:18 – 2202:24 (emphasis added).

¹³⁴ *Id.* at 2203:3-11.

(BH), 2008 U.S. Dist. LEXIS 94391, at *12 (N.D. Tex. July 25, 2008) (expert's failure to consider a recent study "goes to the weight, not the admissibility, of the evidence") (citing *Knight v. Kirby Inland Marine Inc.*, 482 F.3d 347, 354 (5th Cir. 2007)).

Accordingly, although styled as an attack on methodology, to the extent that Garlock's Motion seeks to exclude any evidence pertaining to the causative relationship between exposure to asbestos-containing products and the development of mesothelioma, Garlock's argument, in actuality, merely attacks the conclusions of the Committee's experts. Differing opinions concerning the conclusions to be drawn from the scientific literature do not provide a basis for exclusion of expert testimony. The opinions of the Committee's expert witnesses, while not to Garlock's liking, are based on reliable methodology and scientific research. Chrysotile asbestos has been determined to be capable of causing and contributing to cause mesothelioma not just by the Committee's experts but by a host of other scientists in the field of asbestos disease. Garlock's gasket and packing products are also implicated by these studies as they contain chrysotile asbestos. As this Response and the testimony of the Committee experts at trial has demonstrated, studies have shown that people who work with and around gasket and packing products have substantial exposures to asbestos and an increased risk of asbestos related diseases such as mesothelioma, and the medical literature is full of examples of mesotheliomas arising after exposure to asbestos from chrysotile and chrysotile containing products. That mesothelioma is a low-dose asbestos-related cancer has been demonstrated time and again. The opinions of the Committee's experts, Drs. Welch, Brodtkin and Brody are shared by dozens of other experts in the field and have been admitted in countless trials over the past thirty years.

CONCLUSION

The Committee's experts' medical opinions about mesothelioma causation and the ability of chrysotile to cause mesothelioma even at "low doses" have been admitted in countless courts,

both state and federal, throughout this country. Although there are a handful of outliers, in litigation as vast as asbestos, this should not be surprising. In the overwhelming majority of asbestos cases that get tried, the plaintiff's causation experts are permitted to testify. The Committee has come forward with sufficient proof that its experts' opinions concerning causation are reliable, generally accepted, based on substantial scientific research and, therefore, are admissible.

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Respectfully submitted

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